JVC

SERVICE MANUAL

MODEL QL-F6

QUARTZ FULLY AUTOMATIC TURNTABLE

No. 2464
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Contents

Pages

1. Specifications 2
2. Service Precautions 2
3. Features 2
4. Names of Parts and Their Functions 3
5. Replacement Procedures
   - 5-(1) Stylus 5
   - 5-(2) Headshell 5
   - 5-(3) Cartridge 5
   - 5-(4) Motor 5
   - 5-(5) HQ/VQ Damping Knobs 6
6. Lubrication
   - 6-(1) HQ/VQ Damping Mechanism 6
   - 6-(2) Motor 6
   - 6-(3) Fully Automatic Mechanism 6
7. Adjustment Procedures
   - 7-(1) QUARTZ LOCK/PITCH CONTROL Meter 6
   - 7-(2) Quartz Lock Adjustment 8

   Tonearm Section
   - 7-(3) Headshell Angle 8
   - 7-(4) Tonearm Elevator 8
   - 7-(5) Overhang 9
   - 7-(6) Lead-in 9
   - 7-(7) Lead-out 9
   - 7-(8) Tracking Force 10
   - 7-(9) Anti-skating 11
   - 7-(10) HQ/VQ Damping 11
8. QL-F6 Block Diagram 11
9. Troubleshooting Charts
   - 9-(1) Platter does not rotate. 12
   - 9-(2) Platter rotates at high speed. 13
   - 9-(3) Pitch Control operates abnormally. 14
10. Exploded Views and Parts List
    - 10-(1) Cabinet & Mechanism Ass'y 15
    - 10-(2) Mechanism Ass'y 17
    - 10-(3) Tonearm Ass'y 18
11. Printed Circuit Board Ass'y and Parts List
    - 11-(1) MDC-938G 19
    - 11-(2) TPS-206 21
12. Accessories List 21
13. QL-F6 Schematic Diagram 22
14. Packing Materials and Part Numbers 24
15. Parts List with Specified Numbers for Designated Areas . . . . . Back page

1. Specifications

MOTOR SECTION
(These specifications apply only to the quartz lock mode.)

Motor	: Coreless, DC type, FG servomotor
Servo system	: Phase-locking to the quartz oscillator
Drive system	: Direct drive
Speeds	: 33-1/3, 45
Fine pitch adjustable range	: ± 6 % (at the pitch control mode)
Wow and flutter	: 0.025 % (WRMS)
Signal-to-noise ratio	: More than 78 dB (DIN-B)
Speed detection	: Frequency generator
Starting torque	: More than 1.2 kg-cm
Speed deviation	: Within 0.002 %
Load characteristics	: 0 % (with 170 g total tracking force)
Drift	: 0.0001 %/H
Power characteristics	: 0 % (± 10 V)
Temperature characteristics	: 0.00005 %/°C
Platter	: 32.7 cm

TONEARM SECTION

Type	: Statically-balanced oil-damped tonearm
Effective arm length	: 233 mm
Overhang	: 15 mm
Weight range including headshell	: 13 – 20 g 24 g (when using the provided sub-counterweight)

CARTRIDGE SECTION
(Except for USA, Canada and U.K.)

Type	: Moving magnet (MD-1025EB)
Frequency response	: 10 Hz – 25,000 Hz
Output	: 3 mV (1 kHz)
Channel separation	: 25 dB (1 kHz) (using the test record TRS-1)
Load resistance	: 47 – 100 k-ohms
Compliance	: 10×10^{-6} cm/dyne (dynamic) 30×10^{-6} cm/dyne (static)
Stylus	: DT-Z1EB, 0.3 x 0.7 mil. (diamond, elliptical)
Optimum tracking force	: 1.75 g ± 0.25 g

GENERAL

Power consumption	: 15 W
Dimensions	: Height 14.2 cm (with closed cover) Width 45.6 cm Depth 40.0 cm (Since the dimensions show only the design measurements, consideration is required when installing the unit in a limited space such as a rack, etc.)
Weight	: 11 kg (without the packaging)
Accessories	
EP adapter	: 1 Place the adapter on the center spindle when playing a record having a bigger diameter center hole such as a doughnut record.
Sub-counterweight	: 1

Design and specifications subject to change without notice.

2. Service Precautions

- Be sure to use JVC standard parts.
- When repairing the speed control circuit board connect the m938 G motor in order to prevent damage to the transistor used in the platter drive section.
- Be sure to adjust motor speed with the unit level, otherwise fluctuations which make adjustment impossible may occur.
- When repairing circuit board with the heat sink removed, attach mobile heat-sink to prevent the transistor temperature from rising.

3. Features

- Newly developed oil-damped tonearm assures high trackability.
- Highly sensitive, new gimbal-support tonearm system.
- Double-quartz servo circuit and high torque, non-resonance coreless motor give high reliability.
- Extra-heavy aluminum diecast platter (2 kg including the mat, inertia 330 kg/cm^2).
- Howling margin is greatly improved with the new super-compound (type-1) board used as the base.
- Operation buttons and controls are positioned at the front for easy operation.
- NR-type headshell with minimum resonance is employed.
- Moving-magnet cartridge with a elliptical stylus.
- Fine pitch control allows adjustment within ± 6 % (approx. a half note).
- Quartz lock/Pitch control meter for convenient speed check.
- Fully automatic mechanism.

QL-F6
No. 2464

4. Names of Parts and Their Functions

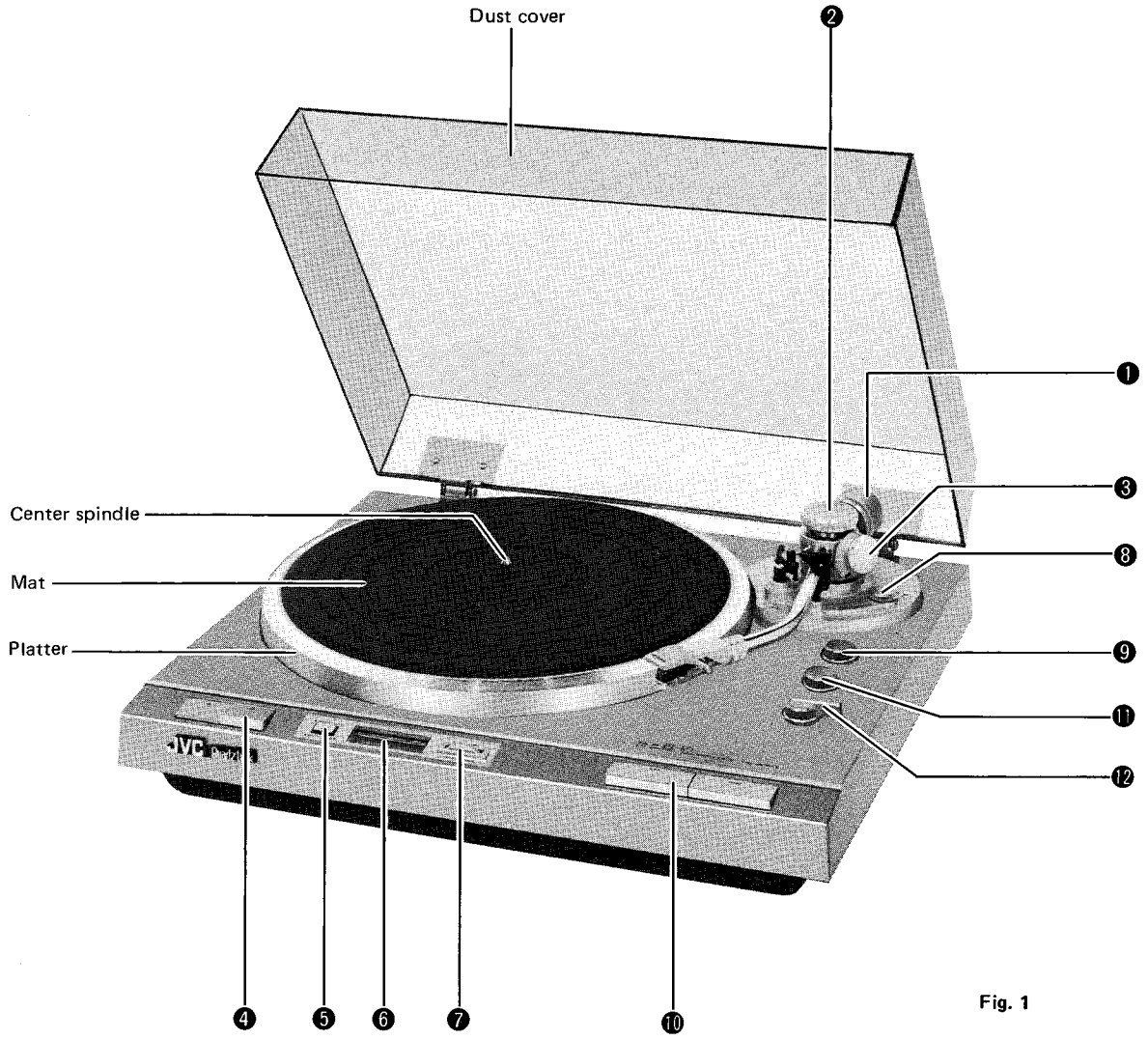


Fig. 1

1. OIL DAMPED TONEARM

Ordinarily tonearms have a resonance frequency of between 5 to 10 Hz. If the peak of the range of a tonearm is too high, accurate tracking of the tonearm with the record groove cannot be obtained because the tonearm resonates at a frequency generated by ambient vibrations or sound pressure, or the tonearm can be influenced by adverse conditions of the record such as warps, etc. The OIL DAMPED TONEARM is designed to suppress the range of resonance by maintaining a low resonant point of the tonearm to prevent howling. With this OIL DAMPED TONEARM, accurate tracking of the record groove as well as a good resistant characteristic to howling is possible, thus resulting in an improveved S/N ratio. In order to improve the sound quality, the OIL DAMPED TONEARM plays an important role.

2. **HQ DAMPING knob**
   This controls the horizontal movement of the tonearm while aiding to keep the tonearm's resonating point low. Set the knob to the same indication number as the optimum tracking force of this unit.
3. **VQ DAMPING knob**
   This controls the vertical movement of the tonearm while aiding to keep the tonearm's resonating point low. Set the knob to the same indication number as the optimum tracking force of this unit.
4. **Speed select knob**
   Select a proper position of the speed select knob in accordance with the rpm of the record.
   33-1/3 rpm record (LP) . . . . . "33"
   45 rpm record (EP) . . . . . "45"
5. **QUARTZ LOCK/PITCH CONTROL select button**
   QUARTZ LOCK:
   Depress the button to the QUARTZ LOCK position (▬) for playing a record at an accurate rotation speed in the quartz lock mode. In this case, the meter lights green.
   PITCH CONTROL:
   Depress the button a second time to obtain the PITCH CONTROL position (▬) in order to perform fine pitch adjustment for the sound meeting your preference. In this case, the meter lights orange.
6. **PITCH CONTROL meter**
   When the QUARTZ LOCK/PITCH CONTROL select button is set to the QUARTZ LOCK position, the meter is green-lit and the indicator displays "0". When the QUARTZ LOCK/PITCH CONTROL select button is set to the PITCH CONTROL position, pitch control can be performed by turning the PITCH CONTROL knob and the meter is orange-lit.
   #6 % means +6 %
   *b*6 % means −6 %
7. **PITCH CONTROL knob**
   Fine pitch control can be performed with the QUARTZ LOCK/PITCH CONTROL select button set to the PITCH CONTROL position. Pitch adjustment range is ± 6 %. The indicator in the meter deflecting to the left (#) from the center (0) indicates an increase to the accurate 33-1/3 or 45 rpm and the deflection to the right (*b*) means a decrease.
8. **ANTI-SKATING knob**
   This device cancels out the centripetal force that pulls the tonearm to the center of the platter. This prevents the stylus tip from skating toward the center of the platter and at the same time eliminates any excessive stylus tip force on the inner wall of the record groove. Use the ● marked dial when employing a spherical stylus. Use the ⬬ marked dial when employing an elliptical stylus or a SHIBATA stylus.
   Turn the dial to the same number as on the tracking force dial.
9. **REPEAT knob**
   Decide how many times you want to re-listen to the record by using this knob. When you set the knob to "R", the record will continue to play repeatedly.
   Note: This knob cannot be turned to indicate from 1 − 0 or 0 − 1 if the START button is depressed with the power cord disconnected from the outlet. For this, refer to the note in the section "Necessary procedures prior to record playing" on page 2.
10. **START/REJECT buttons**
    When you start playing a record, depress the START button. The tonearm moves automatically the position of the first groove of the record preselected and gently lowers itself onto the surface of the record to play it. When you stop playing the record, depress the REJECT button. The tonearm lifts, returns automatically to its rest and the platter stops rotating.
    If, however, the REPEAT knob has been set for a number of repeats, the tonearm performs the corresponding number of prepeats before the platter stops rotating.
    Note: When the dial of the repeat knob has been set to numbers other than "0", the platter continues to rotate and the power will not be turned off even though you depress the REJECT button or even if the playing record has finished. When you want the power to be turned off after the record has played once, be sure to set the repeat knob to the "0" mark.
11. **RECORD SIZE select knob**
    Set the knob to the corresponding position to the size of the record before you play it.
    30 cm diameter record . . . . . "30" (12")
    25 cm diameter record . . . . . "25" (10")
    17 cm diameter record . . . . . "17" (7")
12. **Arm lifter lever**
    This is used when you want to raise the tonearm gently or gently lower it. When you push it to the "UP" position, the tonearm will be lifted up, and when you pull it to the "DOWN" position, it will be lowered down gently onto the record surface.

5. Replacement Procedures

5-(1) Stylus

• Stylus replacement (See Fig. 2)
Replacement of the stylus can be easily made by simply inserting the stylus plug (A) into the jack (B) of the cartridge. Service life of the stylus employed for this unit (DT-Z1EB) is generally as follow; varying, depending on the record condition (dirty record groove etc.):
Stereo LP record (30 cm) . . . Approx. 300 – 500 hours
Stylus are disposable items. Therefore, it is recommended to buy a supply of styli when you buy the unit. When purchasing them, specify the DT-Z1EB (JVC standard).

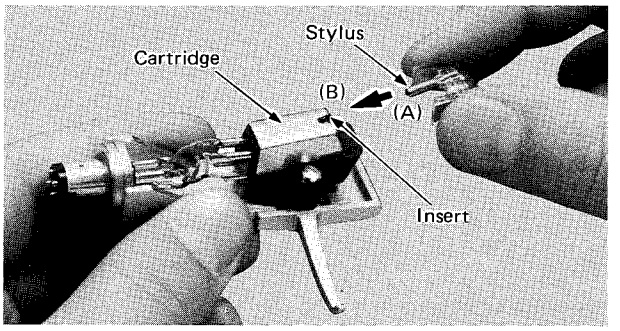


Fig. 2

5-(2) Headshell

• Removal and mounting of the headshell (See Fig. 3)
Turn the connector nut in the direction of "A" to remove the headshell from the tonearm. Turn it in the direction of "B" for mounting the headshell.

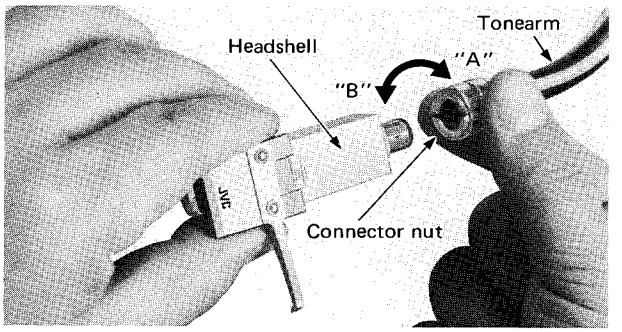
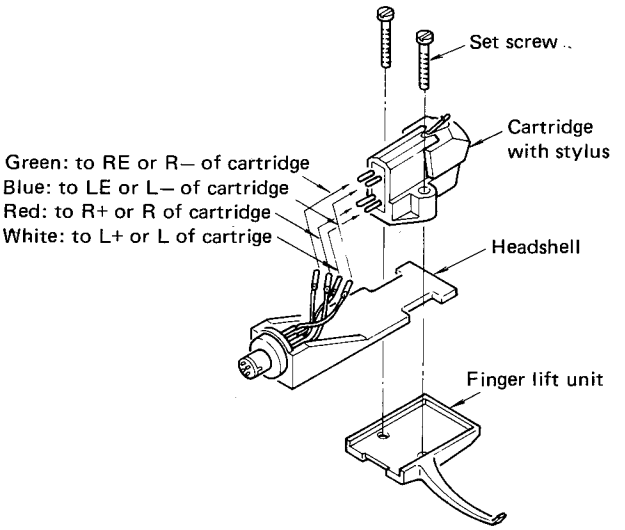


Fig. 3

5-(3) Cartridge

Mounting the cartridge (See Fig. 4)
1. Remove the 2 screws securing the cartridge onto the headshell.
2. Install your cartridge onto the headshell provided or onto a headshell of your selection.
3. The headshell lead wires are color-coded as follows, connect them correctly.
   White (+) . . . . . L Red (+) . . . . . R
   Blue (–) . . . . . LE Green (–) . . . . . RE
4. Mount the cartridge properly onto the headshell and leave the set screws slightly loosened, then, after completing the "Overhang adjustment" (See page 9) tighten them firmly. After this adjustment, be sure that the conditions concerning the 3 adjustments on page 5 and 6 are satisfactorily met.
5. After each cartridge replacement, be sure to perform the 4 adjustments described on page 9.


Set screw
Cartridge with stylus
Green: to RE or R– of cartridge
Blue: to LE or L– of cartridge
Red: to R+ or R of cartridge
White: to L+ or L of cartrige
Headshell
Finger lift unit
Fig. 4

5-(4) Motor

How to remove the motor (Fig. 5)
Remove the motor in the following sequence. There is no need to remove the mechanism's base.
1. Remove the stopper, main gear and spring attached to the motor plate.
2. Disconnect the plug connecting the motor with the speed control circuit board.
3. Remove the 4 screws securing the motor.
4. Lift the trip lever as shown in the figure while taking care not to deform it and remove the motor while tilting it.
5. Mount the motor, in the reverse order.

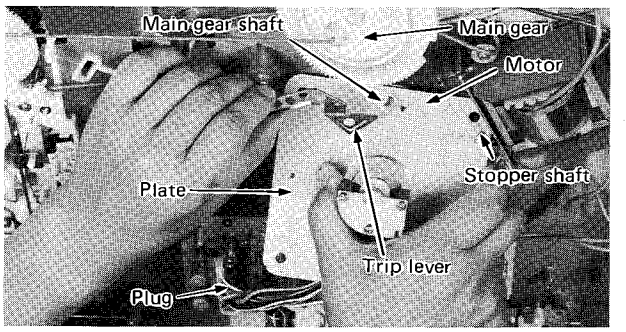


Fig. 5

5-(5) HQ/VQ Damping Knobs

When replacement of VQ or HQ damping knob becomes necessary, do it in the following sequence.

- **How to replace the HQ damping knob (Fig. 6)**

1. Remove the 2 screws securing the HQ damping knob and remove the knob.
2. Turn the HQ controller clockwise until it stops.
3. Clamp the tonearm to its rest.
4. Mount the new HQ damping knob on the HQ controller with the indication "3" on the knob aligned with the index line. Secure it with the 2 screws.
5. After replacing it, perform adjustment referring to the section "How to use" on page 4.

- **How to replace the VQ damping knob (Fig. 6)**

Replace in the same way as the HQ damping knob is replaced.

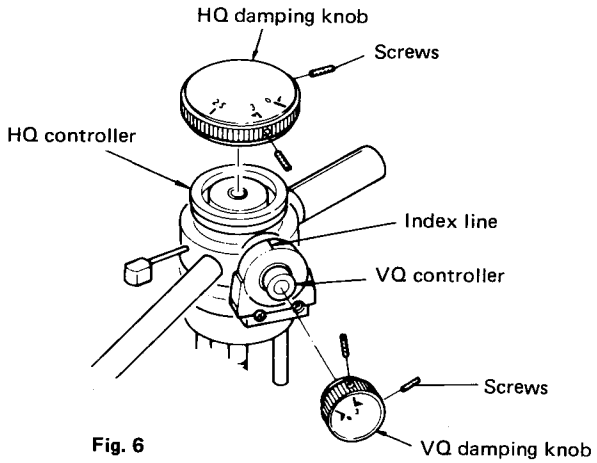


Fig. 6

6. Lubrication

6-(1) HQ/VQ Damping Mechanism

QL-F6 turntables are completely adjusted at the factory prior to shipment. The damping mechanism cannot be repaired and it is recommended that it be replaced if it malfunctions.

6-(2) Motor

The motor needs no lubrication.

6-(3) Fully Automatic Mechanism

Apply high quality grease to connecting and sliding parts after they are replaced.

7. Adjustment Procedures

Servo-motor Control Section

7-(1) QUARTZ LOCK/PITCH CONTROL Meter

How to use the QUARTZ LOCK/PITCH CONTROL meter (See Fig. 7-A)

QUARTZ LOCK (▬):
When the QUARTZ LOCK/PITCH CONTROL select button (1) is depressed to the QUARTZ LOCK position, the meter (2) becomes green-lit. In this mode the rotation speed is accurately controlled by phase-locking to the quartz oscillator frequency. This means that correct 33-1/3 or 45 rpm is obtained. The indicator (2) of the meter displays "0".

PITCH CONTROL (▮):
When performing fine pitch adjustment, depress the QUARTZ LOCK/PITCH CONTROL select button (1) to the PITCH CONTROL position and the meter becomes orange-lit. In this mode, fine pitch adjustment can be performed by turning the PITCH CONTROL knob (3) within a range of ± 6 %. Turning the knob in the (+) direction (counterclockwise) increases the rpm. Turning it in the (-) direction (clockwise) decreases the rpm. The meter indication of +6 % (#) shows the reproduced sound raised by approximately a half tone.

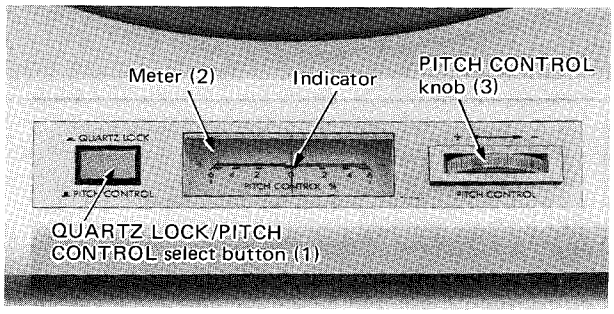


Fig. 7-A

The -6 % (*b*) indication shows the reproduced sound is lowered by approximately a half tone.
By making these adjustments, record sound reproduction meeting your preference can be obtained.

How to make adjustments if the pitch control meter should indicate incorrectly (when the meter does not display "0" in the QUARTZ LOCK operation). (See Fig. 7-B)

1. Disconnect the power cord from the outlet.
2. Remove the platter from the motor shaft.
3. Turning the "0" position adjusting screw clockwise moves the indication to the right.
   Turning this screw counterclockwise moves the indication to the left.
   Generally, there is no need for adjustment since proper adjustment has been performed at the factory. Should the indication of the meter be incorrect, adjust it in the manner above.

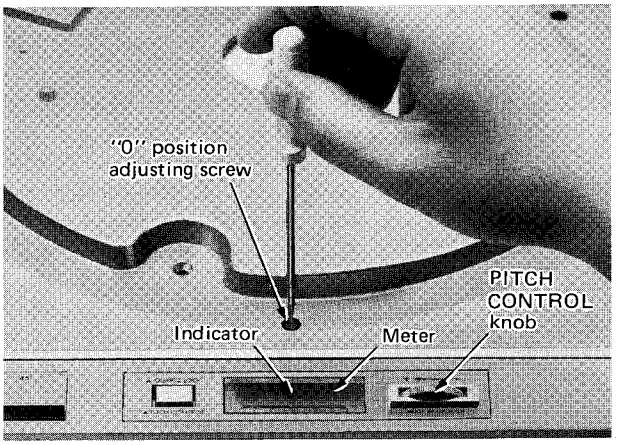


Fig. 7-B

Adjustment of the FINE PITCH CONTROL meter (See Fig. 7-C)

Perform this meter adjustment referring to the items below after making mechanical adjustments pertaining to rpm or repairing the meter circuits.

1. Function of the variable resistors used

1) VR1 (4.7kΩ):
   Connected in series with the meter and controls the current flowing into the meter. Used to adjust the full-scale deflection (± 6 %) of the meter.
2) VR2 (4.7kΩ).
   Employed for adjusting the pointer of meter to indicate the center position "0" at 33-1/3 rpm or 45 rpm.
3) VR4 (47 kΩ):
   There is no need to adjust this variable resistor because of the automatic adjusting system. However, adjustment in the following order is necessary after the motor is replaced or the circuit is repaired. Turning VR4 to the right (clockwise) as seen from the circuit board decreases the speed, and turning it to the left (counterclockwise) increases the speed and unlocks it. When it is unlocked platter rotation becomes unstable. Adjust VR4 to its middle position where the rotation speed is stable and does not increase or decrease.
4) VR5 (22 kΩ):
   For adjusting the oscillation frequency of the pitch control. Adjust VR5 (to near its middle position) with the speed selector set to "33-1/3" until the correct speed is obtained.
5) VR6 (10kΩ):
   Pitch control located on front panel.
   For detail, see PITCH CONTROL on page 6.

2. Adjustment method (See Fig. 7-C)

Perform mechanical adjustment for the meter to indicate the center position before connecting to an AC outlet for electrical adjustment.

1) Adjustment of the oscillation frequency of the non-stable multivibrator
   Connect a frequency counter to TP-1 with the QUARTZ LOCK/PITCH CONTROL select button while set in the PITCH CONTROL position. Turn VR5 with VR6 set to near the center position until a frequency counter reading of 172.8 kHz obtained.
2) Center indication adjustment of the meter.
   Turn VR2 with the speed select knob set to 33-1/3 until the meter indicates the center position "0". Then, set the speed select to 45 rpm and the meter indicates the center position "0".
   Confirm again that the meter indicates center position at the 33-1/3 rpm.
3) Full-scale deflection (± 6 %) adjustment
   Turn VR6 until an oscillation frequency of 183.2 kHz (+6 %) is obtained. Turn VR1 until the meter correctly indicates +6 %.
   Turn VR6 until an oscillation frequency of 162.4 kHz (−6 %) is obtained and confirm that the meter correctly indicates −6 %. Deflection of the meter out of the −6 % zone is allowable. Turn VR1 until the meter indicates −6 %, if the meter deflection is insufficient for −6 %. In this condition, deflection of the meter out of the +6 % zone may occur, but is allowable.

- The meter adjustment can be performed using a stroboscope, even if measuring equipment is not available. Turn VR5 with VR6 set to the center position until the stroboscope appears stationary. For the center indication adjustment, follow the same manner as when employing a frequency counter. It is not possible to perform the full scale deflection adjustment and adjustment of VR1 is unnecessary.

7-(2) Quartz Lock Adjustment

This adjustment is necessary only after replacing or repairing VC4046 (IC1) or replacing VR4. Prepare a voltmeter or tester having an impedance of more than 20 kΩ/V. Connect it between Pin 10 and the ground terminal of IC1 and turn VR4 until a reading of 3 ± 0.5 V is obtained.
Slight adjustment errors are negligible thanks to the automatic lock-in type IC. The adjustment can be correctly performed with a tester having an impedance 1 k – 5 kΩ if an impedance conversion is performed in some manner, such as using an emitter-follower circuit.

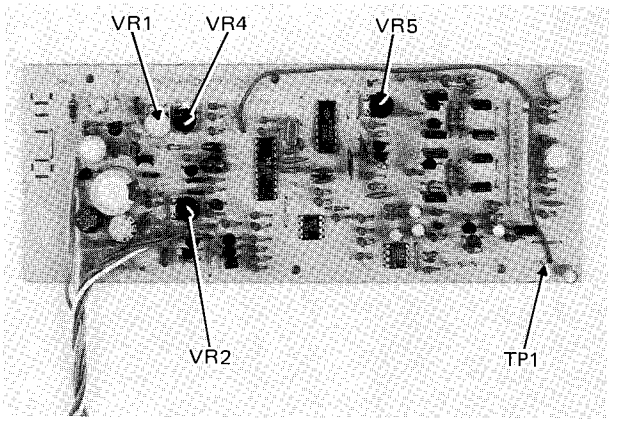


Fig. 7-C

Tonearm Section

7-(3) Headshell Angle

- **Headshell mounting angle adjustment (See Fig. 8-A, 8-B)**

If the headshell is not horizontal and the stylus tip is not perpendicular to the record surface, loosen the lock screws as shown in the illustration and move the headshell to adjust the stylus to be at right angles (90°) with the platter. Eye-measurement is sufficient.
Be sure to retighten the screws after the adjustment is completed.

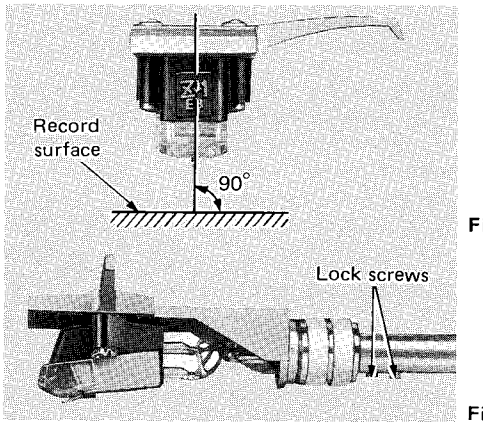


Fig. 8-A

Fig. 8-B

7-(4) Tonearm Elevator

- **Tonearm elevator height adjustment (See Fig. 9)**

The optimum clearance between the stylus tip and the record surface is about 6 mm when the tonearm is supported by the tonearm elevator. Turning the adjusting screws clockwise lowers the height of the tonearm elevator and counterclockwise increases it.

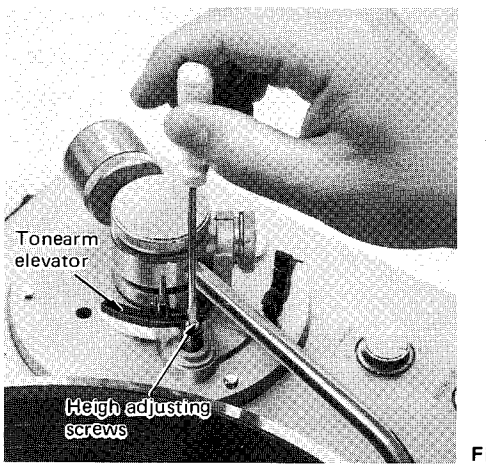


Fig. 9

7-(5) Overhang

- **Overhang adjustment (See Fig. 10)**

To obtain optimum overhang, when mounting the cartridge, first align the cartridge's longitudinal axis to that of the headshell and position the cartridge so that the distance between the headshell's end face and the stylus tip equals 48 mm.
Be sure to tighten the set screw after the adjustment. Errors within 1 mm are negligible from a practical point of view.

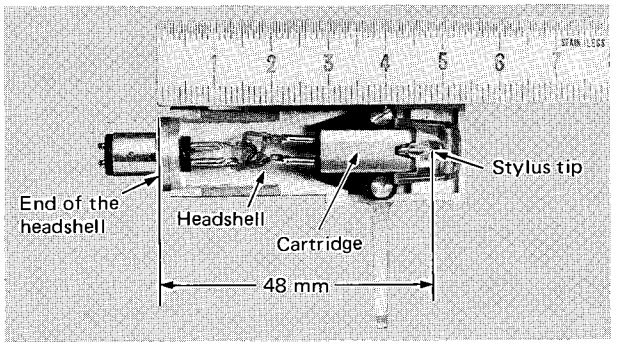


Fig. 10

7-(6) Lead-in

- **Stylus lead-in position adjustment (See Fig. 11)**

Your QL-F6 was shipped from the JVC factory with its stylus lead-in position adjustment made properly. However, if the stylus lead-in position is changed due to cartridge changes, etc., adjust it as in the following:

1. Place a 30 cm record on the platter.
2. Set the record size select knob to "30" (12") and operate the turntable in automatic play.
3. Confirm if the stylus lead-in position is about 3 to 4 mm inward from the outermost edge of the record disc.
4. If the lead-in position is not in the proper range, turn the adjustor screw with a screwdriver clockwise to increase the distance between the lead-in position and the outermost edge, and counterclockwise to decrease the distance. Thus determine the proper lead-in position point to be about 3 to 4 mm inward from the disc edge.

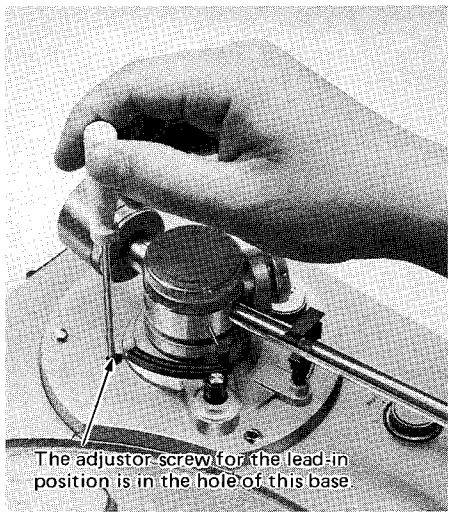


Fig. 11

7-(7) Lead-out

- **Stylus lead-out adjustment (Fig. 12)**

Be sure to perform this adjustment after replacing the tonearm, motor or related mechanism.

1. Use a 17 cm (7") record (with a lead-out groove diameter of about 110 mm).
2. Remove the platter from the motor shaft. Turn the adjustor screw accessible through the hole shown in the figure clockwise with a − screwdriver to increase lead-out tuning.
3. Confirm the lead-out position with a 17 cm (7") record with its inter-band track as near to the innermost groove as possible. If the lead-out position is incorrect, re-adjust it by turning the adjustment screw.

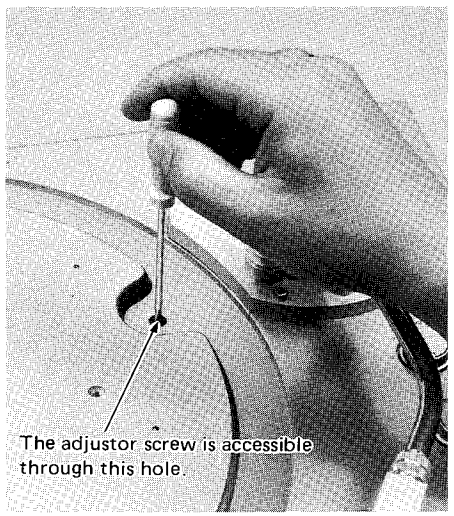


Fig. 12

7-(8) Tracking Force

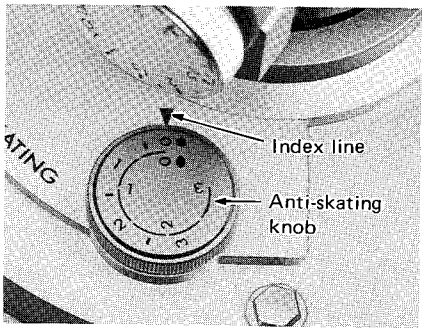


Fig. 13

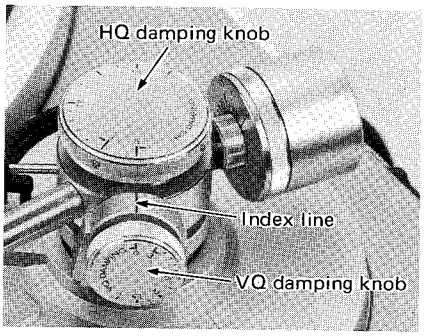


Fig. 14

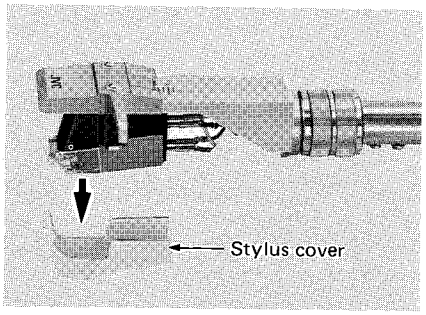


Fig. 15

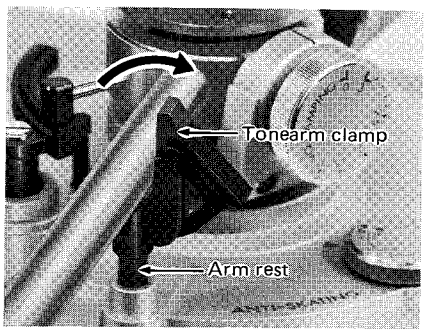


Fig. 16

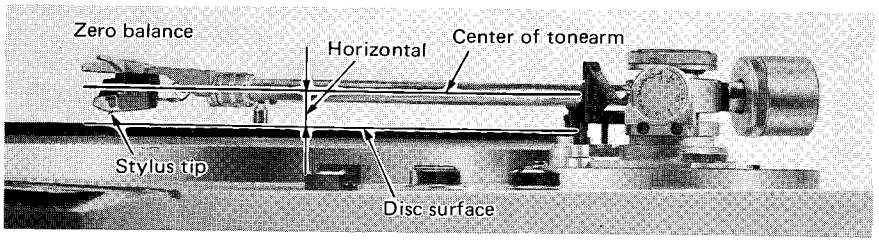


Fig. 17

1. Tracking force adjustment

1. Turn the anti-skaing knob until the "0" mark is aligned with the index line. (See Fig. 13)
2. Turn the HQ damping knob until the "0" mark is aligned with the index line. (See Fig. 6)
3. Turn the VQ damping knob until the "0" mark is aligned with the index line. (See Fig. 14)
4. Place a disc on the platter.
5. Remove the stylus cover from the stylus. (See Fig. 15)
6. Release the tonearm clamp. (See Fig. 16)
7. Zero balance adjustment (See Fig. 17)
   Turn the counterweight until the tonearm is balanced. Stop turning the counterweight when the stylus tip is almost touching the disc surface.
8. Return the tonearm to the rest and clamp it.
9. Hold the counterweight at the adjusted position and turn the tracking force dial until the "0" mark is aligned with the index line on the tonearm weight shaft. (See Fig. 19)
10. Turn the counterweight in the B direction until the "1.75" mark on the dial is aligned with the index line. The "1.75" mark means an optimum tracking force of 1.75 g is being applied. (See Fig. 20)
    Note:
    Turning the counterweight in the direction A decreases the tracking force and increase it in the direction B. Turning the dial only, has no effect on the tracking force.

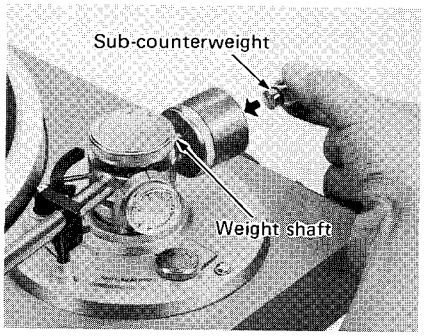


Fig. 18

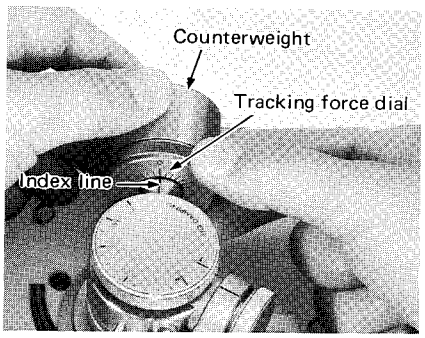


Fig. 19

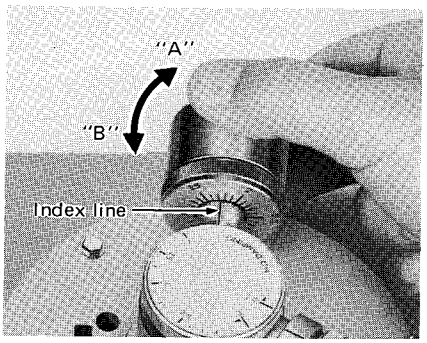


Fig. 20

7-(9) Anti-skating

Anti-skaing adjustment

Adjust the anti-skaing force according to the cartridge being used. Turn the anti-skating knob dial to the same number on the tracking force dial. Use the ● marked dial when employing a spherical stylus. Use the ⬬ marked dial for an elliptical or a Shibata stylus. Set the "1.75" of the ⬬ marked dial to the index line since the QL-F6 is provided with an elliptical stylus and the tracking force has been adjusted to 1.75 g. (See Fig. 21)

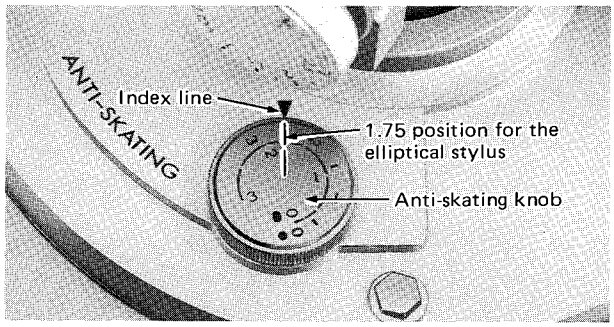


Fig. 21

7-(10) HQ/VQ Damping

Turn the HQ damping control and the VQ damping control knobs until the "1.75" marks on the dial are aligned with the index line, since the optimum tracking force for this unit is 1.75 g. When not using the oil-damped function turn the knobs until the "0" mark is aligned with the index line. (See Fig. 22)

Caution: Turning the HQ and VQ damping control knobs while playing a record may cause damage to the disc or to the stylus tip. Do not touch them while playing a disc.

Release the tonearm clamp and start playing the record.

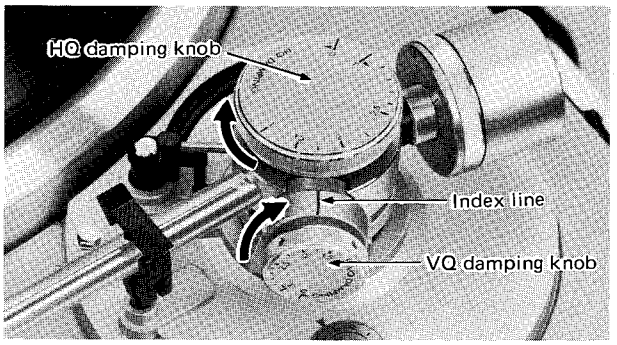


Fig. 22

8. QL-F6 Block Diagram

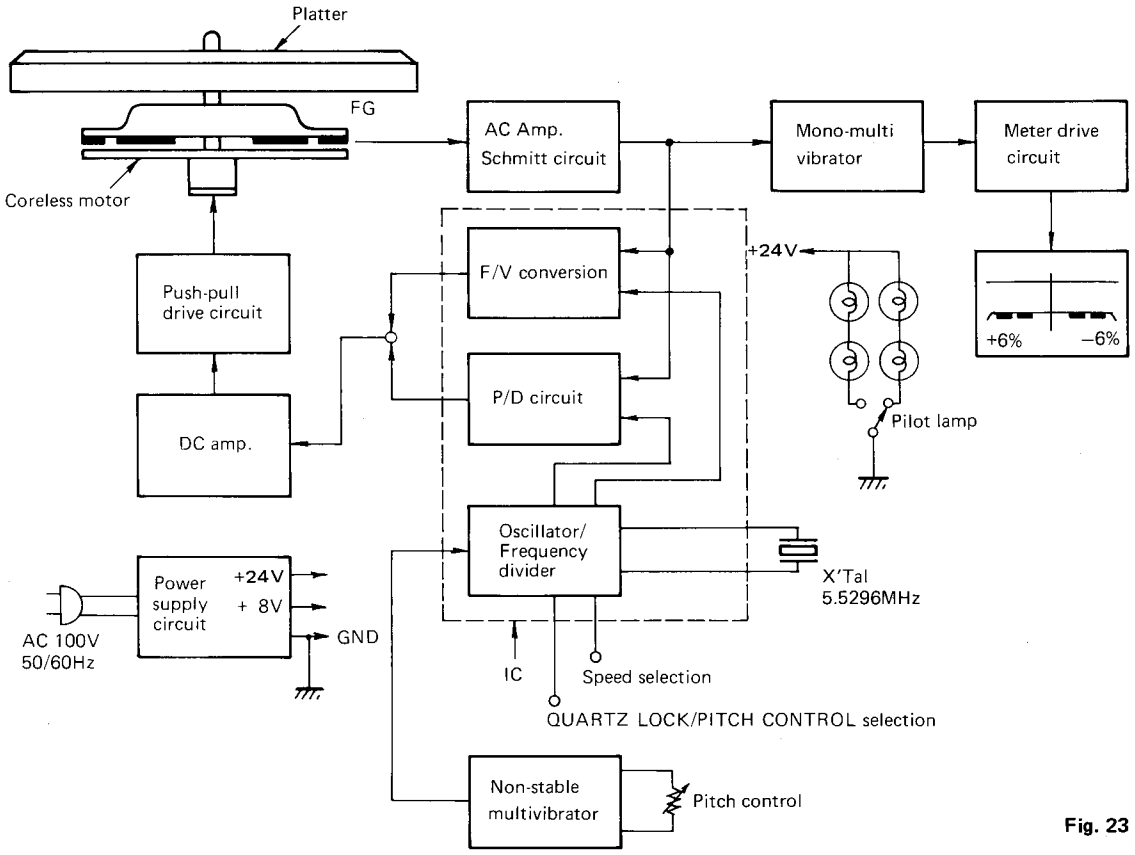
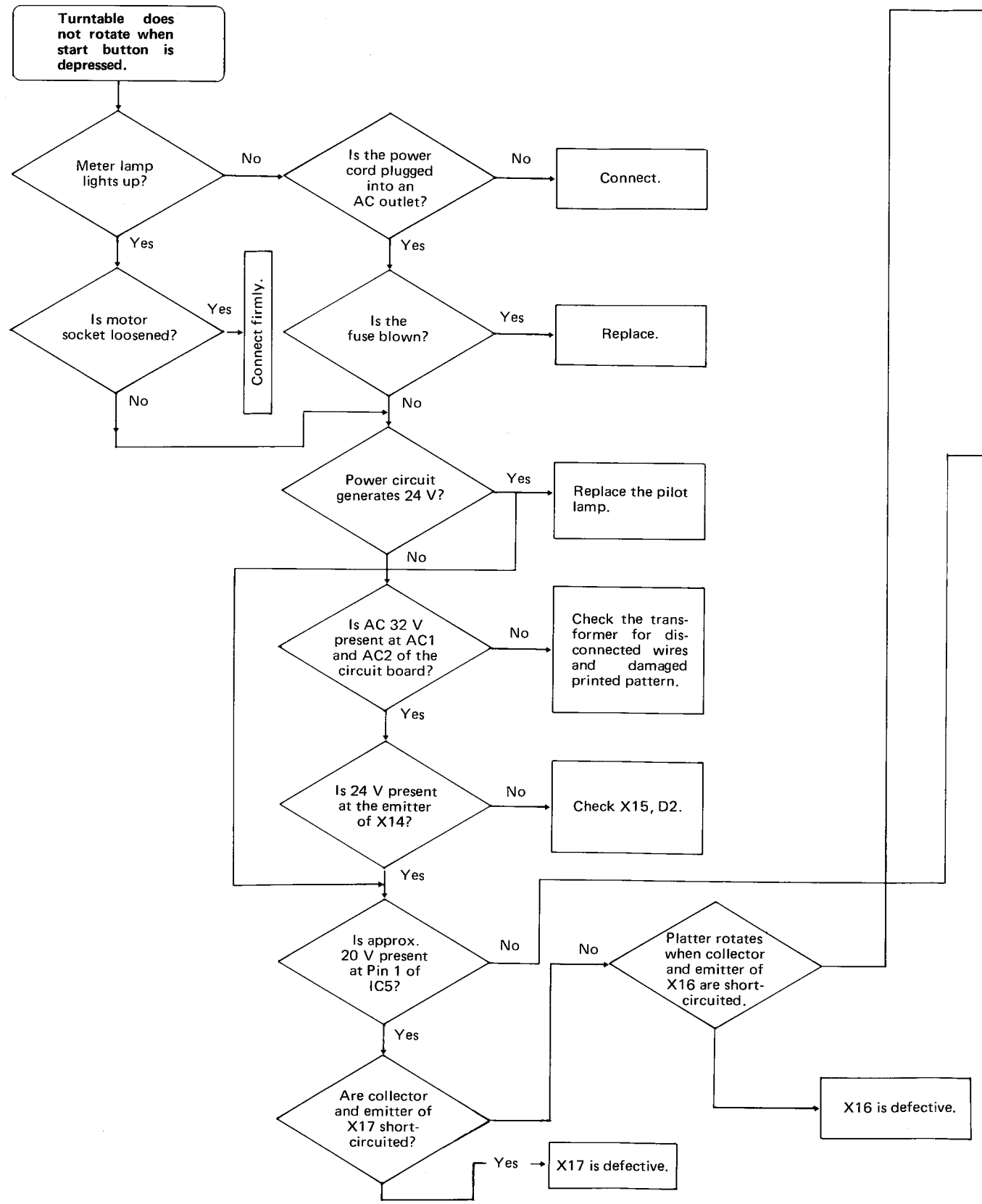


Fig. 23

9. Troubleshooting Charts

9-(1) Platter does not rotate

1. Turntable does not rotate.

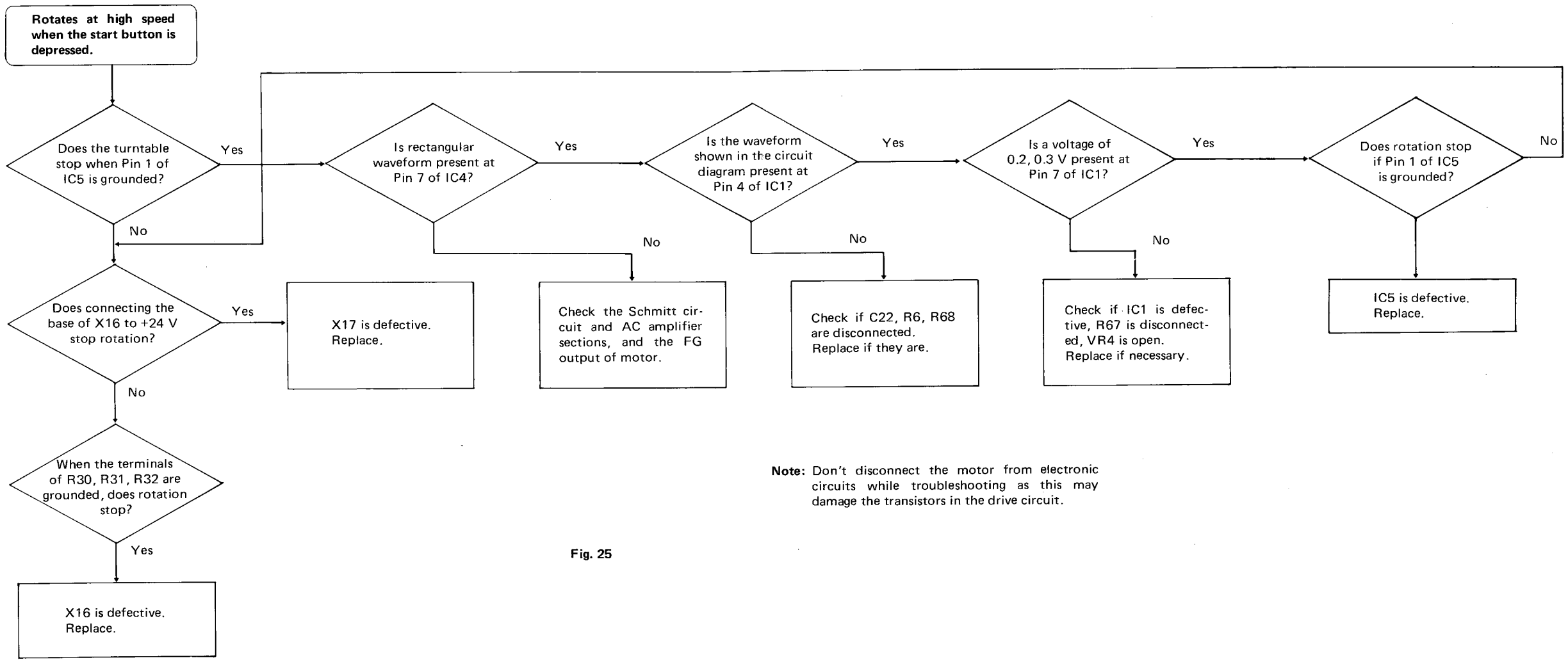

Turntable does not rotate when start button is depressed.
Meter lamp lights up?
No
Is the power cord plugged into an AC outlet?
No
Connect.
Yes
Yes
Is motor socket loosened?
Yes
Connect firmly.
Is the fuse blown?
Yes
Replace.
No
No
Power circuit generates 24 V?
Yes
Replace the pilot lamp.
No
Is AC 32 V present at AC1 and AC2 of the circuit board?
No
Check the transformer for disconnected wires and damaged printed pattern.
Yes
Is 24 V present at the emitter of X14?
No
Check X15, D2.
Yes
Is approx. 20 V present at Pin 1 of IC5?
No
No
Platter rotates when collector and emitter of X16 are short-circuited.
Yes
Are collector and emitter of X17 short-circuited?
X16 is defective.
Yes
X17 is defective.
Turntable continues rotating when rotated by hand?
Yes
Check all driving coils.
No
Check transistors X1 – X12, and Hall elements HG1, HG2.
Is DC 6 V present at Pin 3 of IC5?
Yes
IC5 is defective. Replace.
No
Is DC 6.8 V present at Pin 7 of IC1?
Yes
Is R70 disconnected or badly soldered?
No
Is the waveform shown in the circuit diagram present at Pin 5 of IC1?
Yes
Is IC1 or R66, C23, C24 defective?
Yes
IC1 is defective. Replace.
Is the waveform shown in the circuit diagram present at Pin 7 of IC4 when platter is rotated by hand?
Yes
Check if C22, R6, R68 are open.
No
Observe the FG output and IC4 performance to trase the defect.
Platter rotates?
No
Yes
Perform locking adjustment or check the phase.

Note: Don't disconnect the motor from electronic circuits while troubleshooting as transistors in drive circuit may be damaged.

Fig. 24

9-(2) Platter rotates at high speed.

Platter rotates at high speed.

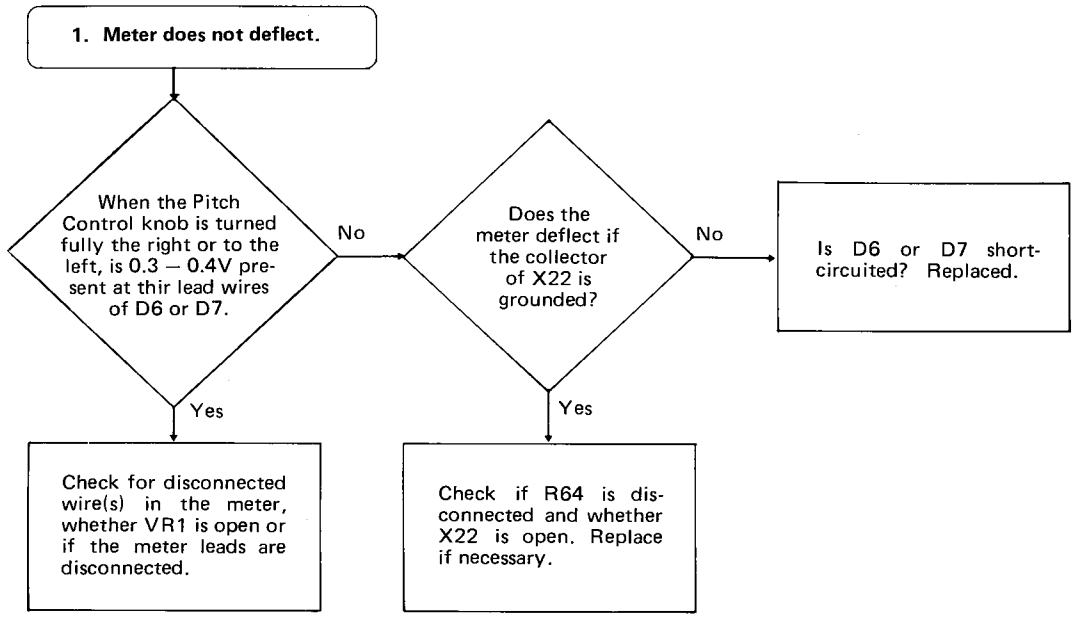

Rotates at high speed when the start button is depressed.
Does the turntable stop when Pin 1 of IC5 is grounded?
Yes
No
Is rectangular waveform present at Pin 7 of IC4?
Yes
No
Is the waveform shown in the circuit diagram present at Pin 4 of IC1?
Yes
No
Is a voltage of 0.2, 0.3 V present at Pin 7 of IC1?
Yes
No
Does rotation stop if Pin 1 of IC5 is grounded?
No
IC5 is defective. Replace.
Does connecting the base of X16 to +24 V stop rotation?
Yes
X17 is defective. Replace.
No
When the terminals of R30, R31, R32 are grounded, does rotation stop?
Yes
X16 is defective. Replace.
Check the Schmitt circuit and AC amplifier sections, and the FG output of motor.
Check if C22, R6, R68 are disconnected. Replace if they are.
Check if IC1 is defective, R67 is disconnected, VR4 is open. Replace if necessary.

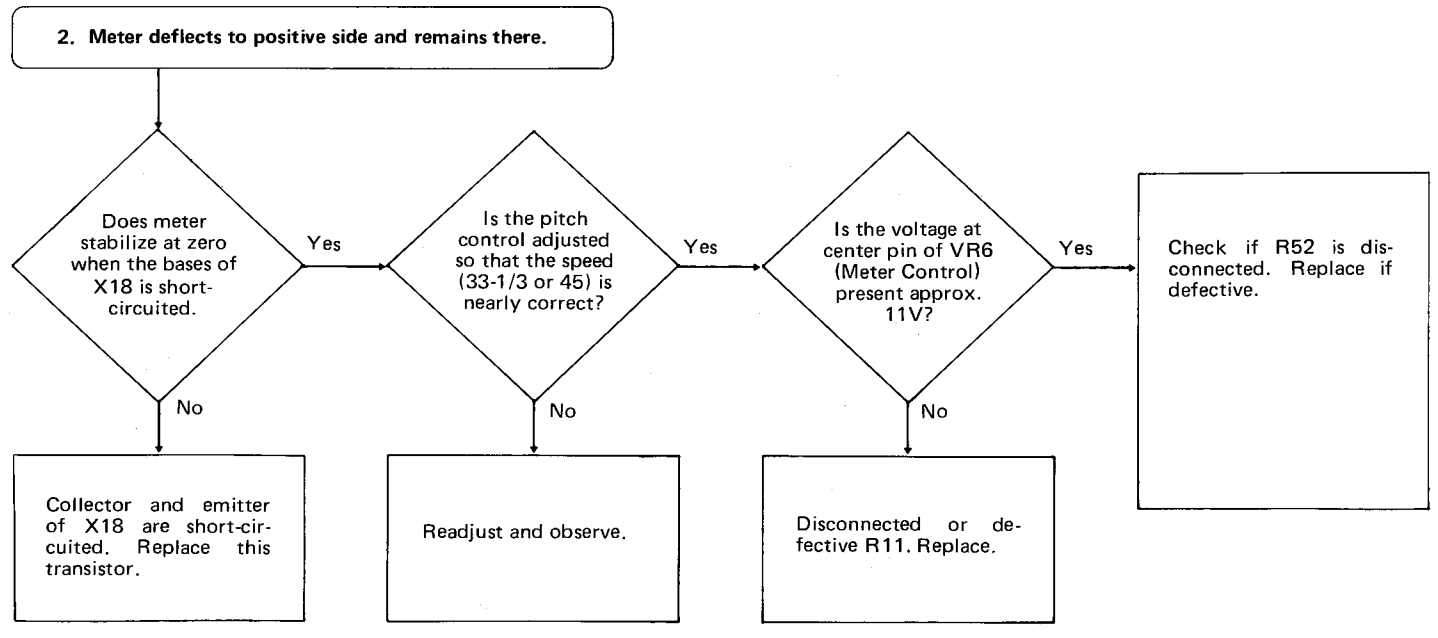
Note: Don't disconnect the motor from electronic circuits while troubleshooting as this may damage the transistors in the drive circuit.

Fig. 25

9-(3) Pitch Control operates abnormally.

Pitch control functions incorrectly.


1. Meter does not deflect.
When the Pitch Control knob is turned fully the right or to the left, is 0.3 – 0.4V present at thir lead wires of D6 or D7.
No
Does the meter deflect if the collector of X22 is grounded?
No
Is D6 or D7 short-circuited? Replaced.
Yes
Check for disconnected wire(s) in the meter, whether VR1 is open or if the meter leads are disconnected.
Yes
Check if R64 is disconnected and whether X22 is open. Replace if necessary.


2. Meter deflects to positive side and remains there.
Does meter stabilize at zero when the bases of X18 is short-circuited.
Yes
Is the pitch control adjusted so that the speed (33-1/3 or 45) is nearly correct?
Yes
Is the voltage at center pin of VR6 (Meter Control) present approx. 11V?
Yes
Check if R52 is disconnected. Replace if defective.
No
Collector and emitter of X18 are short-circuited. Replace this transistor.
No
Readjust and observe.
No
Disconnected or defective R11. Replace.

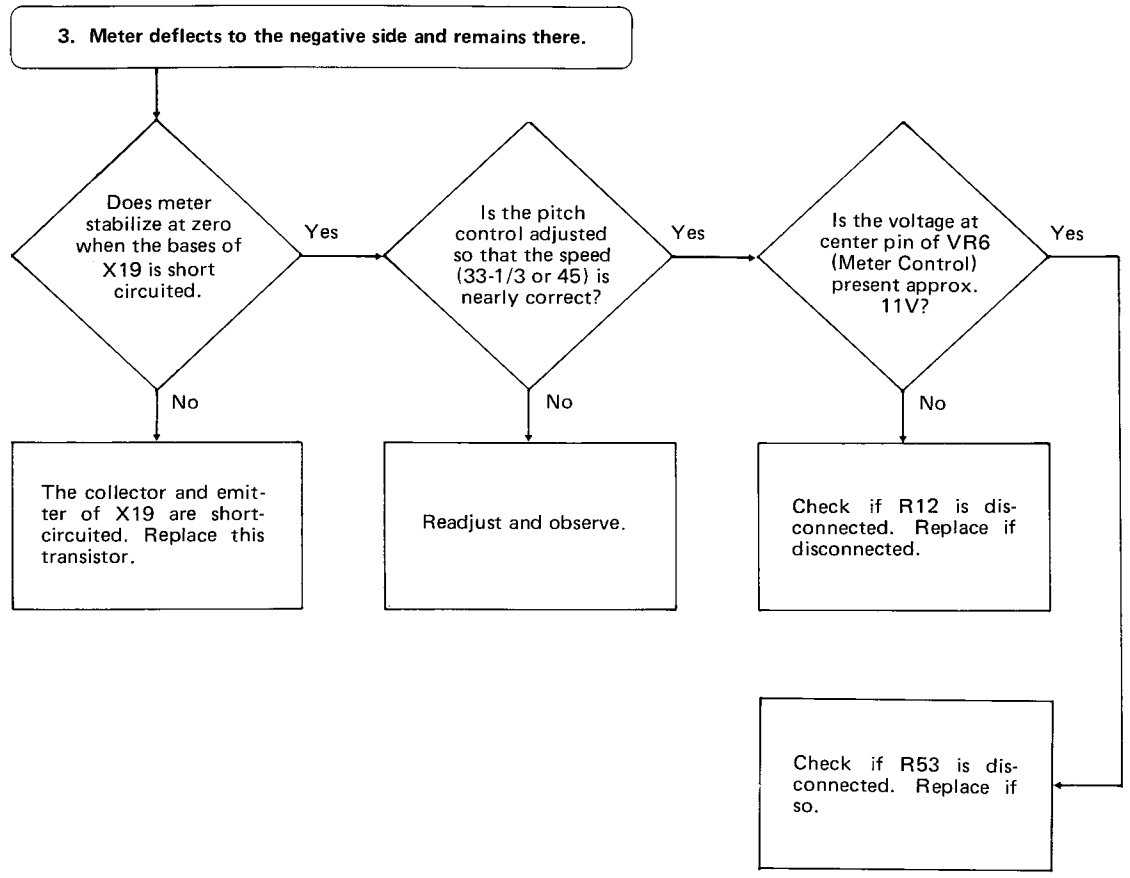
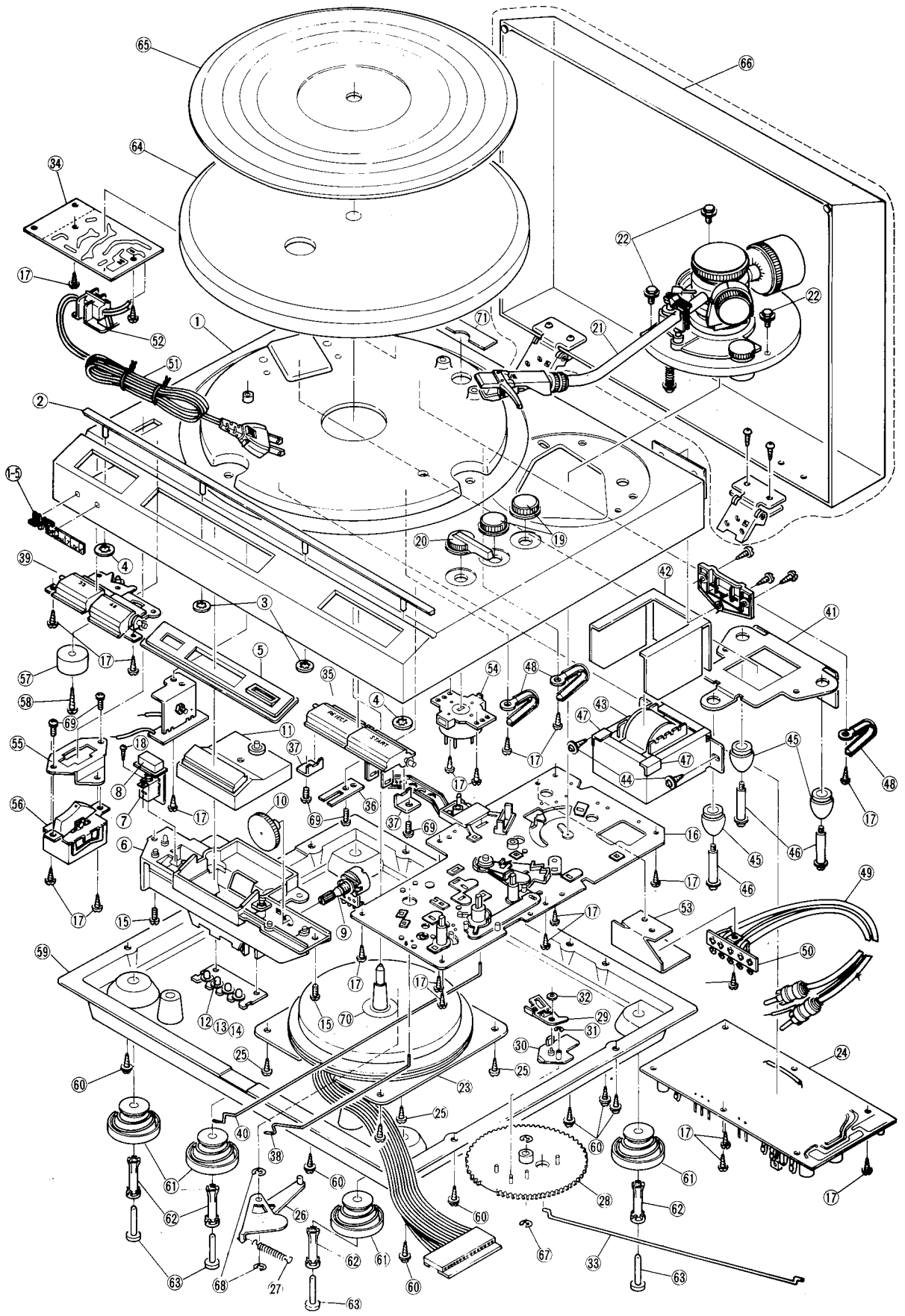

3. Meter deflects to the negative side and remains there.
Does meter stabilize at zero when the bases of X19 is short circuited.
Yes
Is the pitch control adjusted so that the speed (33-1/3 or 45) is nearly correct?
Yes
Is the voltage at center pin of VR6 (Meter Control) present approx. 11V?
Yes
No
The collector and emitter of X19 are short-circuited. Replace this transistor.
No
Readjust and observe.
No
Check if R12 is disconnected. Replace if disconnected.
Check if R53 is disconnected. Replace if so.

Fig. 26

10. Exploded Views and Parts List

10-(1) Cabinet & Mechanism Ass'y



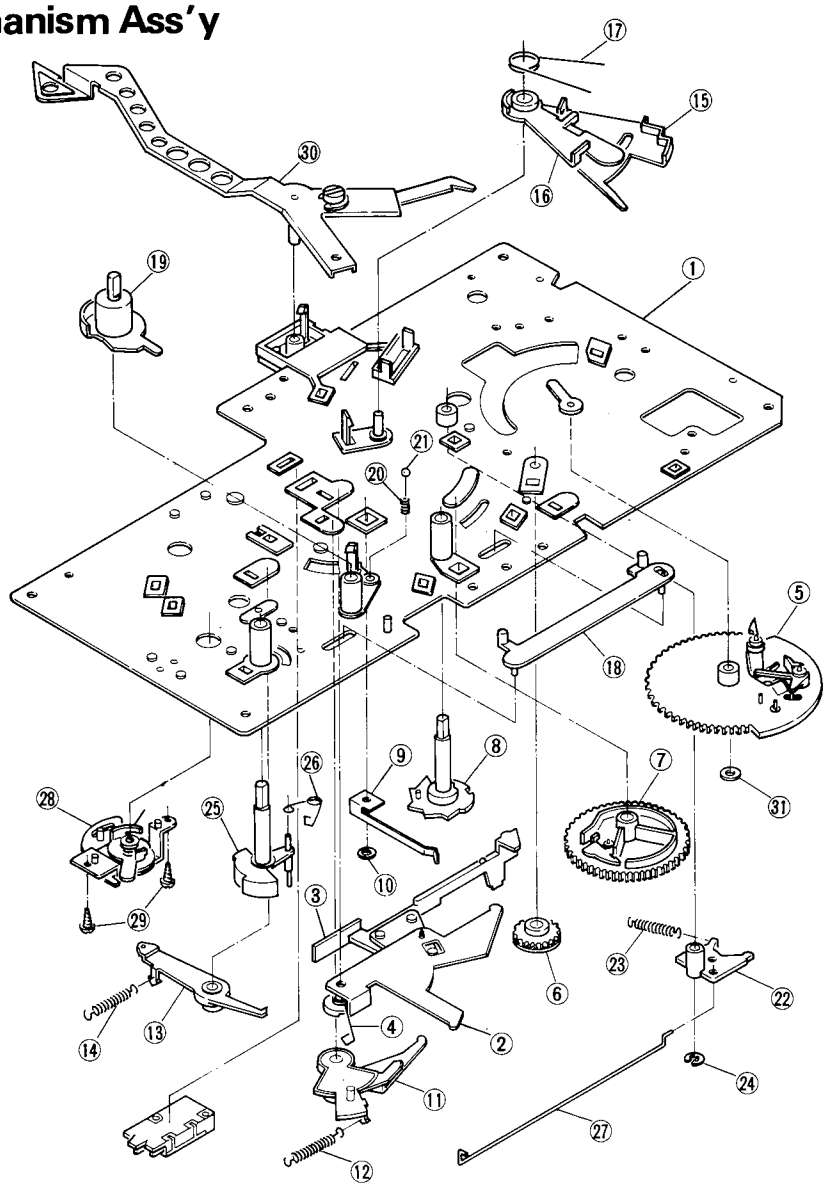
No.	Parts Number	Description
1	See table below.	Motor Board Ass'y
	E65588-001	Lock Plate
	E49447-004	Shaft
	E66140-001	Rubber Sheet
	E35480-002	Mark
2	E35869-001	Fittings
3	G4942-3	Speed Nut
4	G4942-4	"
5	E22873-001	Panel
6	E22911-001	Base
7	QSP2210-059	Push Switch
8	E65912-001	Knob
9	QVD7A2B-014	V. Resistor
10	E61713-003	VR. Knob
11	35981-001	Meter Ass'y
12	QLP3201-1240	Lamp
13	E04353-001	Color Cap (Green)
14	E04353-002	" (Blue)
15	LPSP3008ZS	Ass'y Screw
16	F2001	Mechanism Base Ass'y
17	SBSB3008Z	Tapping Screw
18	SBSB2608Z	"
19	E65714-001	Knob
20	E65715-003	Lever Knob
21	See table below.	Tonearm Ass'y
22	E60331-005	Screw
23	M938G	Motor Ass'y
24	See table below.	Servo Control P.C.B. Ass'y
25	DPSP3008ZS	Screw
26	E35915-002	Stopper
27	E65718-001	Spring
28	E22876-003	Main Gear Ass'y
29	E65282-001	Engagement Pawl
30	E65283-001	Lawer Trip Pawl
31	REE1200	E. Ring
32	E60912-001	Speed Nut
33	E65719-001	Connect. Rod
34	See page 21	Fuse P.C.B. Ass'y
35	E35838-001	Push Knob Ass'y
	E35839-001	Push Knob (START)
	E35839-001	" (REJECT)
	E65726-001	Pivot
	REE3000	E. Ring
36	E65876-001	Leaf Spring
37	E65875-001	Rod Holder

No.	Parts Number	Description
38	E65729-001	Start Rod
39	E35841-001	Push Knob Ass'y
	E65730-001	Bracket Ass'y
	E35842-001	Push Knob (33 rpm)
	E35842-002	" (45 rpm)
	E65733-001	Pivot
	REE2000	E. Ring
40	E65735-001	Reject Rod
41	E35844-001	Trans. Bracket
42	See table below.	Shield Cover
43	See table below.	Power Transformer
44	SBSB4008Z	Tapping Screw
45	E49631-003	Rubber Bushing
46	E49633-001	Motor Holder
47	See table below.	Rubber Sheet
48	E50670-005	Wire Clamp
49	E03724-002G	Signal Cord Ass'y
50	QML0002-051	Lug Strip Ass'y
51	See table below.	Power Cord Ass'y
52	See table below.	Cord Bushing
53	E60090-003	Shield Cover
54	QSR0085-001	Voltage Selector (for U.S. Military Market and other countries only)
55	E65329-001	Holder
56	QSE2235-203BS	Seesaw Switch
57	E66153-001	Weight
58	E61284-001	Tapping Screw
59	E35845-001	Bottom Cover Ass'y
60	GBGB3012M	Tapping Screw
61	See table below.	Foot Ass'y
62	E65877-001	Latch
63	E65878-001	Pin
64	E22874-001	Turntable
65	See table below.	Turntable Sheet
66	E35828-001	Dust Cover Ass'y
	E10298-001	Dust Cover
	E61992-005	Hinge Ass'y
	SDSP3010RS	Screw
67	REE4000	E. Ring
68	REE3000	"
69	LPSP3008ZS	Ass'y Screw
70	E66154-001	Rubber Sheet
71	E66089-001	Caution Label

Parts List with Specified Numbers for Designated Areas

Item No.	Description	U.S.A	Canada	Europe	U.K.	Australia	U.S. Military Market and Other Countries
1	Motor Board Ass'y	E10302-004	E10302-004	E10302-004	E10302-003	E10302-004	E10302-002
21	Tonearm Ass'y	ARM-529	ARM-529	MP-201S	ARM-529	MP-201S	MP-201S
24	Servo Control P.C. Board Ass'y	MDC938G-2	MDC938G-2	MDC938G-3	MDC938G-3	MDC938G-3	MDC938G-2
34	Fuse P.C. Board Ass'y	TPS-206B	TPS-206C	TPS-206E	TPS-206GBS	TPS-206F	TPS-206D
C101	Capacitor ⚠	QFH72BM-473M	QFA72BM-473M	QFZ9007-104	QFZ9007-104BS	QFZ1007-104	QFH53AM-104
	Fuse (Primary) ⚠	QMF61U1-R50 (0.5 A)	QMF61U1-R50 (0.5 A)	QMF51A2-R20 (0.2 AT)	QMF51A2-R20BS (0.2 AT)	QMF51A2-R20 (0.2 AT)	QMF60S1-R50 (0.5 A)
	Fuse (Secondary) ⚠	QMF61U1-1R0 (1A)	QMF61U1-1R0 (1A)	QMF51A2-R80 (0.8AT)	QMF51A2-R80BS (0.8AT)	QMF51A2-R80 (0.8AT)	QMF60S1-R80 (0.8A)
	Fuse Clip ⚠	E45524-001	E45524-001	E48965-002	E48965-002	E48965-002	E45524-001
42	Shield Cover	–	–	E65716-001	E65716-001	E65716-001	E65716-001
43	Power Transformer ⚠	E03032-33B	E03032-33B	E03032-33C	E03032-33CBS	E03032-33C	E03032-33D
47	Rubber Sheet	–	–	E61796-003	E61796-003	E61796-003	E61796-003
51	Power Cord ⚠	QMP1200-200	QMP1200-200	QMP3910-244	QMP9017-007BS	QMP2500-200	QMP1200-200
52	Cord Bushing	QHS3876-162	QHS3876-162	A37897	A37897BS	A37897	A37897
61	Foot Ass'y	E65893-002	E65893-002	E65893-001	E65893-001	E65893-001	E65893-001
65	Turntable Sheet	E22936-002	E22936-002	E22936-001	E22936-001	E22936-001	E22936-001

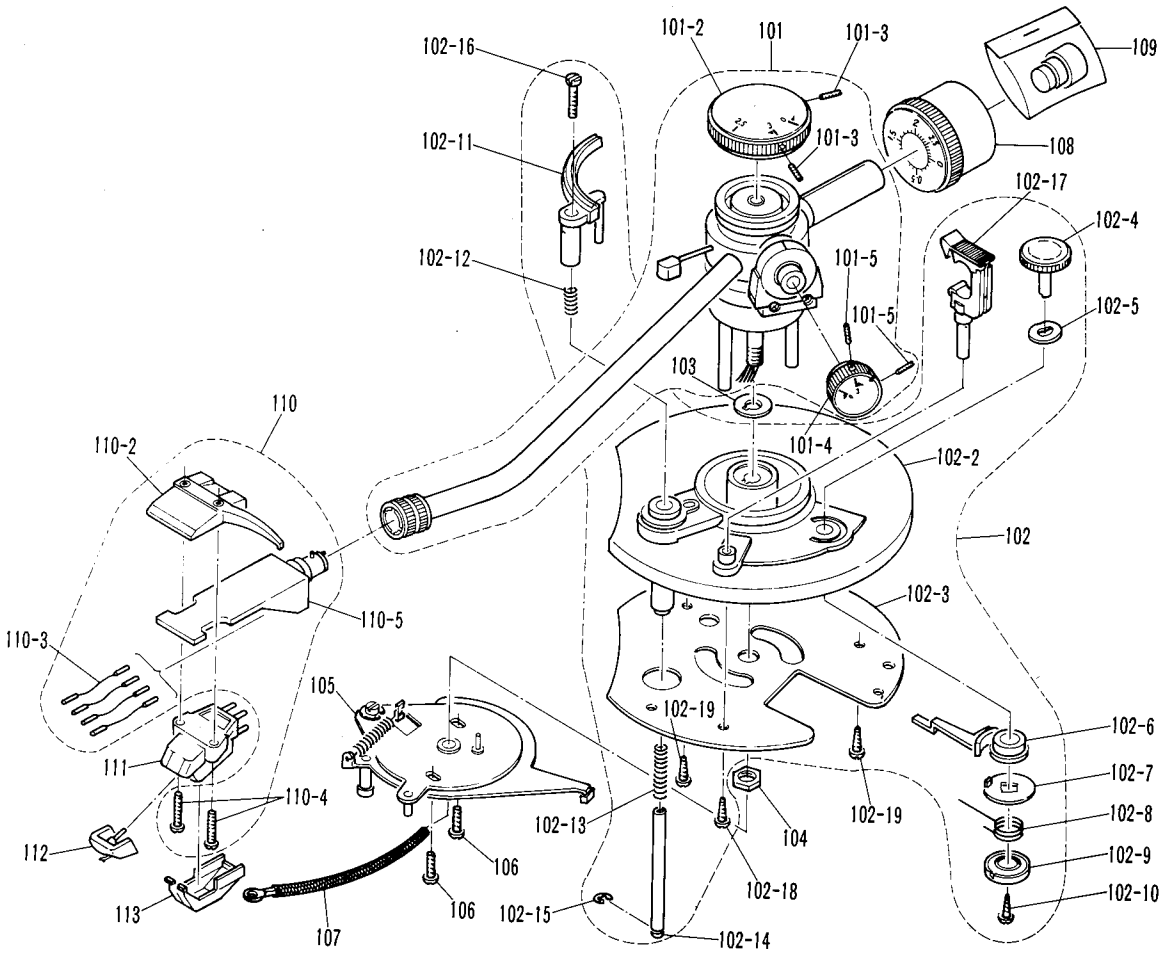
10-(2) Mechanism Ass'y



No.	Parts Number	Description
1	E22883-002	Base Ass'y
2	E60395-001	Reset Plate
3	E60394-003	Switch Plate Ass'y
	E60392-002	Switch Plate
	E60393-002	Switch Lever
	G4942-3	Speed Nut
4	E65740-001	Spring
5	E35851-001	Dr. Gear Ass'y
	E35850-001	Driving Gear
	E60398-001	Lead-In Lever
	E65741-001	Push Lever
	E60912-001	Speed Nut
	E60399-001	Spring
	E65742-001	"
6	E60400-002	Idler Gear
7	E60405-003	Sub Gear Ass'y
	E60402-002	Sub Gear
	E60403-001	Hook
	E60912-001	Speed Nut
	E60404-001	Spring
8	E65744-001	Ratchet Cam
9	E65745-001	Spring
10	E60912-001	Speed Nut
11	E65746-001	Start Lever
12	E65747-001	Spring

No.	Parts Number	Description
13	E65748-001	Lock Lever
14	E60416-001	Spring
15	E35852-001	Index Lever
16	E60426-003	Lever
17	E60427-001	Spring
18	E65873-001	Select Plate
19	E65749-001	Select Lever
20	E60488-001	Spring
21	G41505-005	Steel Ball
22	E60390-002	Elevator Cam
23	E65874-001	Spring
24	REE3000X	E. Ring
25	E65750-001	Cueing Shaft
26	E49608-002	Spring
27	E60414-001	Rod
28	E65956-001	Cueing Ass'y
	E65957-001	Cueing Base
	E65958-001	Cueing Lever
	E65959-001	Washer
	E65960-001	Spring
29	SBSB3010Z	Tapping Screw
30	E65720-001	Trip Lever Ass'y
31	E65959-002	Washer
32	E65959-001	"

10-(3) Tonearm Ass'y



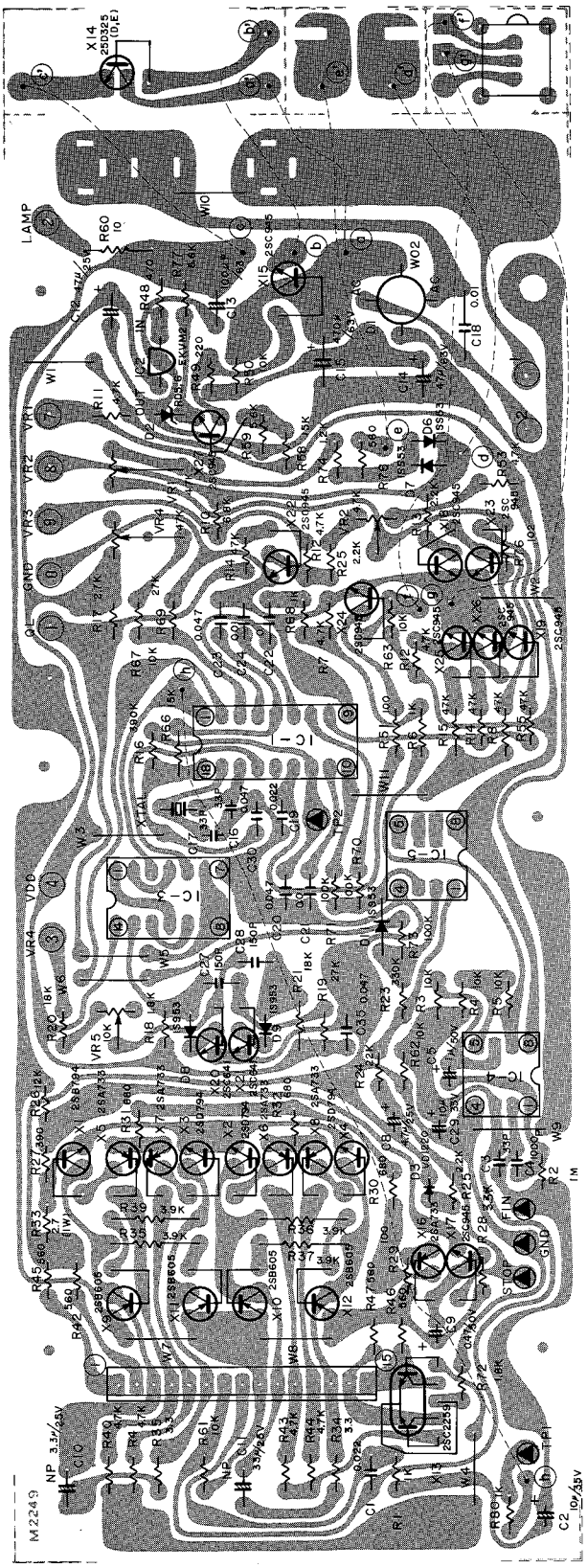
No.	Parts Number	Description
101	E22901-001	Tonearm Ass'y
101-2	E35894-001	Cap (A)
101-3	TCS2002NS	Screw
101-4	E35895-001	Cap (B)
101-5	TRS2006NS	Screw
102	E22902-001	Tonearm Base Ass'y
102-2	E10308-001	Tonearm Base Sub Ass'y
102-3	35897-001	Plate
102-4	E35900-001	Anti-skating Knob
102-5	E49602-002	Wave Washer
102-6	E35901-001	Anti-skating Lever
102-7	E65825-001	Anti-skating Plate
102-8	E65827-001	Anti-skating Spring
102-9	65826-001	Spring Holder
102-10	SBSB2608Z	Tapping Screw
102-11	E65829-001	Elevator Ass'y
102-12	E49649-001	Spring
102-13	E61194-001	"
102-14	E49655-007	Elevator Shaft
102-15	REE3000	"E" Ring

No.	Parts Number	Description
102-16	E65835-001	Screw
102-17	E65824-001	Rest Ass'y
102-18	SBSB2616Z	Tapping Screw
102-19	SBSB2605Z	"
103	E65837-001	Washer
104	E65830-001	Nut
105	E300015-001	Tonearm Lever
106	SPSP3006ZS	Screw
107	E61775-001	Shield Tube
108	E65823-001	Counterweight Ass'y
109	E65938-001	Subweight
110	E35991-002	Headshell Ass'y
110-2	E35989-002	Finger
110-3	E60501-005	Wire Ass'y
110-4	E60502-001	Screw
110-5	E22962-001	Headshell Body
111	MD-1025EB	Cartridge
112	DT-Z1EB	Stylus
113	E34268-001	Stylus Covering

11. Printed Circuit Board Ass'y and Parts List

11-(1) MDC-938G

(Different in Different Area,
see back page)



Transistors

No.	Parts Number	Rating		Description	Maker
		Pc	fT		
X1	2SD794(P,Q)	10 W	55 MHz	Silicon	N.E.C.
X2	2SD794(P,Q)	"	"	"	"
X3	2SD794(P,Q)	"	"	"	"
X4	2SD794(P,Q)	"	"	"	"
X5	2SA733(P,Q)	250 mW	180 MHz	"	"
X6	2SA733(P,Q)	"	"	"	"
X7	2SA733(P,Q)	"	"	"	"
X8	2SA733(P,Q)	"	"	"	"
X9	2SB605(K,L)	800 mW	120 MHz	"	"
X10	2SB605(K,L)	"	"	"	"
X11	2SB605(K,L)	"	"	"	"
X12	2SB605(K,L)	"	"	"	"
X13	2SC2259(G,F)	"	"	"	"
X14	2SD325V(D,E)	10 W	8 MHz	"	Sanyo
X15	2SC945(P,K)	250 mW	250 MHz	"	N.E.C.
X16	2SA733(P,K)	"	180 MHz	"	"
X17	2SC945(P,K)	"	250 MHz	"	"
X18	2SC945(P,K)	"	"	"	"
X19	2SC945(P,K)	"	"	"	"
X20	2SC641K(B,C)	100 mW	400 MHz	"	Hitachi
X21	2SC641K(B,C)	"	"	"	"
X22	2SC945(P,K)	250 mW	250 MHz	"	N.E.C.
X23	2SC945(P,K)	"	"	"	"
X24	2SC945(P,K)	"	"	"	"
X25	2SC945(P,K)	"	"	"	"
X26	2SC945(P,K)	"	"	"	"
X27	2SC945(P,K)	"	"	"	"

Integrated Circuits

No.	Parts Number	Rating	Description	Maker
IC1	VC4046		IC	Oki Denki Kogyo
IC2	NJM78L08A		"	Shin Nihon Musen
IC3	MSM4001		"	Oki Denki Kogyo
IC4	NJM4558D-D		"	Shin Nihon Musen
IC5	NHM4558D		"	"

Diodes

No	Parts Number	Rating	Description	Maker
D1	WO2		Silicon	G.I.
D2	RD5.6EKVM2		Zener	N.E.C.
D3	VC1220		Varistor	"
D6	1SS53		Silicon	"
D7	1SS53		"	"
D8	1S953(A,B,C)		"	"
D9	1S953(A,B,C)		"	"
D11	1SS53		"	"

Capacitors

No.	Parts Number	Rating		Description
C1	QCF11HP-223	0.022 μF	DC 50 V	Ceramic
C2	QET41VR-106	10 μF	DC 35 V	Electrolytic
C3	QCT05UJ-330	33 pF	DC 50 V	Ceramic
C4	QCY41HK-102	1000 pF	"	"
C5	QET41HR-105	1 μF	"	Electrolytic
C8	QET41ER-475	4.7 μF	DC 25 V	"
C9	QET41HR-474	0.47 μF	DC 50V	"
C10	QEN41EA-336	33 μF	DC 25V	Nonpolarized
C11	QEN41EA-336	"	"	Electrolytic Electrolytic
C12	QET41ER-476	47 μF	"	"
C13	QET41JR-107	100 μF	DC 63 V	"
C14	QET41JR-476	47 μF	"	"
C15	QET41JR-477	470 μF	"	"
C16	QCT05UJ-330	33 pF	DC 50 V	Ceramic

Capacitors

No.	Parts Number	Rating		Description
C17	QCT05UJ-330	33 pF	DC 50 V	Ceramic
C18	QCE12HP-103	0.01 μF	DC 500 V	"
C19	QCF11HP-223	0.022 μF	DC 50 V	"
C20	QFM41HK-473	0.047 μF	"	Mylar
C21	QCF11HP-103	0.01 μF	"	Ceramic
C22	QFM41HK-104	0.1 μF	"	Mylar
C23	QFM41HK-473	0.047 μF	"	"
C24	QCF11HP-103	0.01 μF	"	Ceramic
C27	QCT05CH-151	150 pF	DC 50 V	"
C28	QCT05CH-151	"	"	"
C29	QET41VR-106	10 μF	DC 35 V	Electrolytic
C30	QCF11HP-473	0.047 μF	DC 50V	Ceramic
C35	QCF11HP-473	"	"	"

Resistors

No.	Parts Number	Rating		Description
R1	QRD143J-102	1kΩ	¼W	Carbon
R2	QRD143J-105	1MΩ	"	"
R3	QRD143J-103	10kΩ	"	"
R4	QRD143J-102	1kΩ	"	"
R5	QRD143J-104	10kΩ	"	"
R6	QRD143J-103	1kΩ	"	"
R7	QRD143J-472	4.7kΩ	"	"
R8	QRD143J-473	47kΩ	"	"
R9	QRD143J-473	47kΩ	"	"
R10	RE36YQ-6.8KF	6.8kΩ	"	Metalized Film
R11	RE35YQ-4.7KF	4.7kΩ	"	" "
R12	RE35YQ-4.7KF	"	"	"
R13	QRD143J-222	2.2 kΩ	"	Carbon
R14	QRD143J-473	47 kΩ	"	"
R15	QRD143J-473	"	"	"
R16	QRD143J-394	390 kΩ	"	"
R17	QRD143J-272	2.7 kΩ	"	"
R18	QRD143J-182	1.8 kΩ	"	"
R19	QRV141F-2702	2.7 kΩ	"	Metalized Film
R20	QRV141F-1802	1.8 kΩ	"	" "
R21	QRD143J-182	1.8 kΩ	"	Carbon
R23	QRD143J-334	330 kΩ	"	"
R24	QRD143J-223	22 kΩ	"	"
R25	QRD143J-222	2.2 kΩ	"	"
R26	QRD143J-123	12 kΩ	"	"
R27	QRD143J-391	390 Ω	"	"
R28	QRD143J-332	3.3 kΩ	"	"
R29	QRD143J-101	100 Ω	"	"
R30	QRD143J-680	68 Ω	"	"
R31	QRD143J-680	"	"	"
R32	QRD143J-680	"	"	"
R33	QRX016J-2R7	2.7 Ω	1W	Metalized Film
R34	QRD143J-3R3	3.3 Ω	¼W	Carbon
R35	QRD143J-3R3	"	"	"
R36	QRD141J-392	3.9 kΩ	"	"
R37	QRD141J-392	"	"	"
R38	QRD141J-392	"	"	"
R39	QRD141J-392	"	"	"
R40	QRD143J-472	4.7 kΩ	"	"
R41	QRD143J-472	"	"	"
R42	QRD123J-561	560 Ω	½W	"
R43	QRD143J-472	4.7 kΩ	¼W	"
R44	QRD143J-472	"	"	"
R45	QRD123J-561	560 Ω	½W	"
R46	QRD123J-561	"	"	"
R47	QRD123J-561	"	"	"
R48	QRD143J-471	470 Ω	¼W	"
R49	QRD143J-220	22 Ω	"	"
R50	QRD143J-103	10 kΩ	"	"
R51	QRD143J-101	100 Ω	"	"

Resistors

No.	Parts Number	Rating		Description
R52	RE35YQ-3.3KF	3.3 kΩ	¼W	Metalized Film
R53	RE35YQ-4.7KF	4.7 kΩ	"	" "
R55	QRD143J-473	47 kΩ	"	Carbon
R58	RE35YQ-15KF	15 kΩ	"	Metalized Film
R59	RE35YQ-5.6KF	5.6 kΩ	"	" "
R60	QRD146J-100	10 Ω	"	Carbon
R61	QRD143J-103	10 kΩ	"	"
R62	QRD143J-103	"	"	"
R63	QRD143J-103	"	"	"
R64	QRD143J-473	47 kΩ	"	"
R66	QRD143J-153	15 kΩ	"	"
R67	QRD143J-103	10 kΩ	"	"
R68	QRD143J-102	1 kΩ	"	"
R69	QRD143J-273	27 kΩ	"	"
R70	QRD143J-104	100 kΩ	"	"
R71	QRD143J-104	"	"	"
R72	QRD143J-182	1.8 kΩ	"	"
R73	QRD143J-104	100 kΩ	"	"
R74	QRD143J-122	1.2 kΩ	"	"
R76	QRD143J-102	1 kΩ	"	"

Resistors

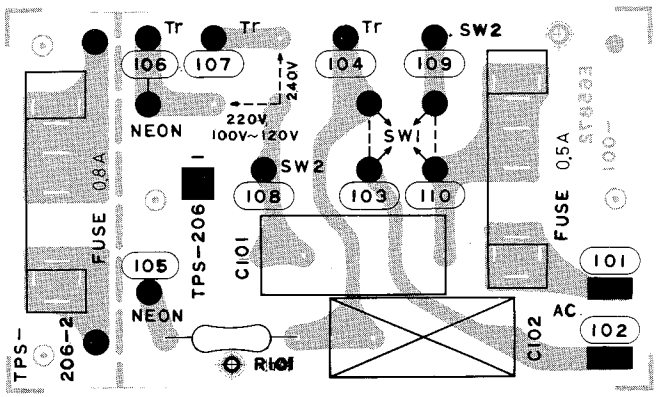
No.	Parts Number	Rating		Description
R77	QRD143J-562	5.6 kΩ	¼W	Carbon
R78	QRD143J-561	560 Ω	"	"
R80	QRD143J-102	1 kΩ	"	"
VR1	RVAV310-472	4.7 kΩ	—	Variable
VR2	RVGV811-472	"	—	"
VR4	RVGV413-473	47 kΩ	—	"
VR5	RVGV811-103	10 kΩ	—	"

Others

No.	Parts Number	Rating	Description
	LA-0303		Quartz Crystal
	E03732-015A		Plug
	E65674		Heat Sink
	QSP0026-001		Push Switch

11-(2) TPS-206 Fuse P.C. Board Ass'y

(Different in Different Area, see back page)



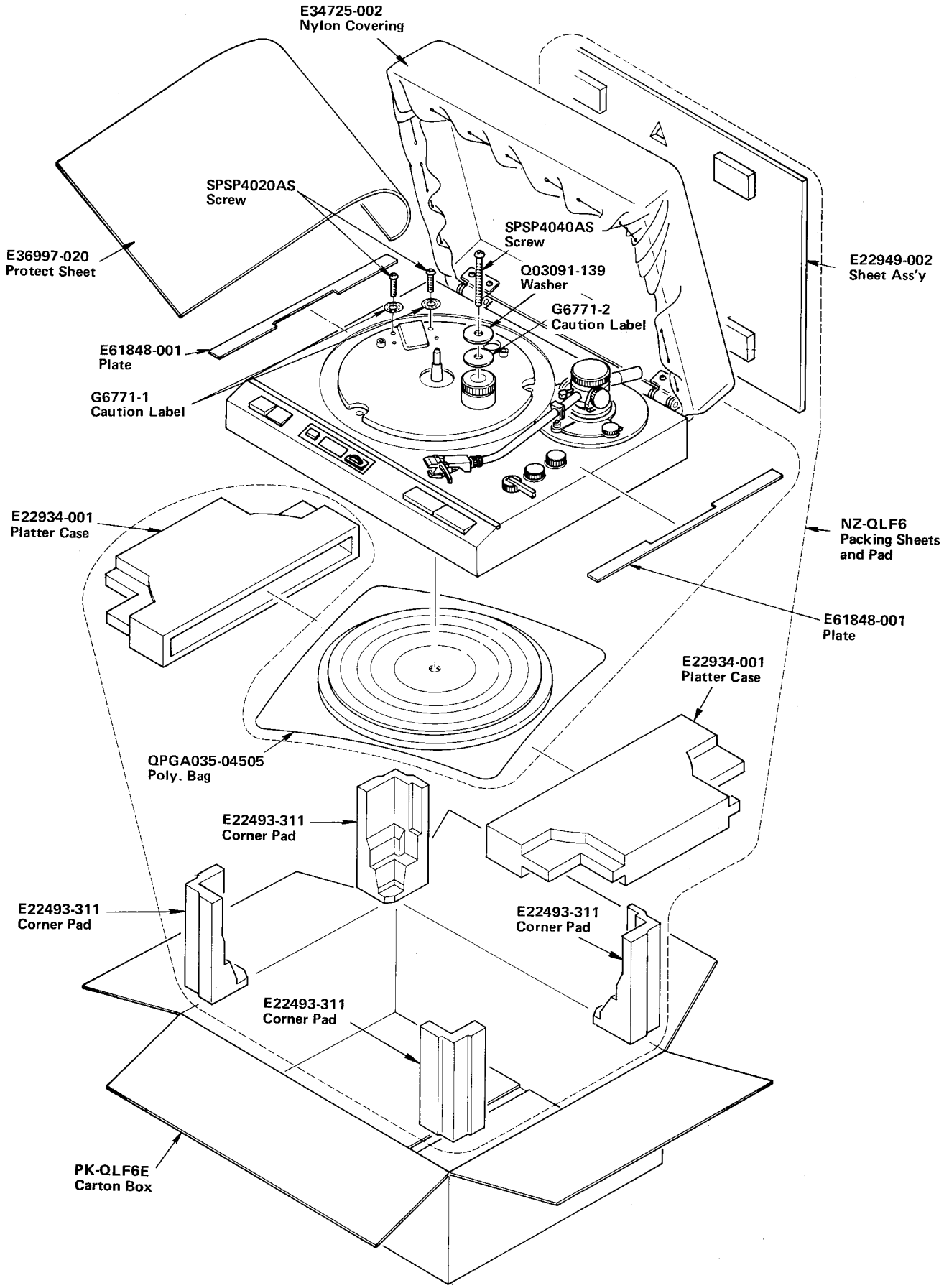
Item No.	Part Number	Description
C101	See back page.	Capacitor ⚠
	"	Fuse ⚠
	"	Fuse clip ⚠

⚠ : Safety Parts

12. Accessories List

Description	U.S.A.	Canada	Europe	U.K.	Australia	U.S. Military Market and Other Countries
Instruction Book	E30580-717A	E30580-717A E30580-717B	E30580-717A E30580-717B	E30580-717A	E30580-717A	E30580-717A
Warranty Card	BT20032	BT20025	—	BT20013B	BT20029	BT20032 (U.S. Military Market)
Special Replay Card	BT20024B	—	—	—	—	—
Service Procedure	BT20023	—	—	—	—	—
Siemens Plug	—	—	—	—	—	E04056 (Other Countries)
Screw Ass'y (for Cartridge)	E61153-003	E61153-003	—	E61153-003	—	—
E.P. Adapter	E48820-001	E48820-001	E48820-001	E48820-001	E48820-001	E48820-001
Envelope	E64207-001	E64207-001	E64207-001	E64207-001	E64207-001	E64207-001

14. Packing Materials and Part Numbers



15. Parts List with Specified Numbers for Designated Areas

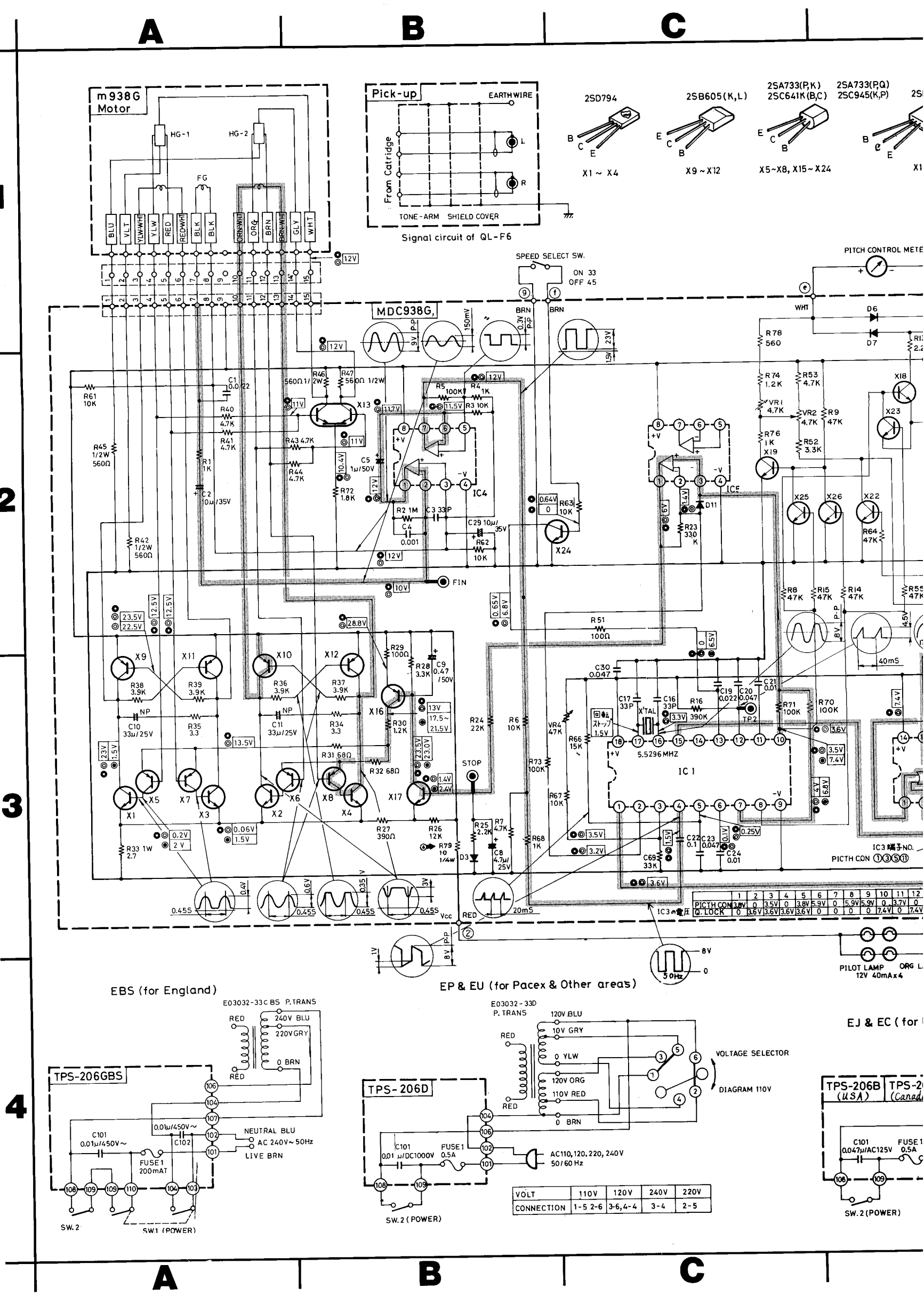
Item No.	Description	U.S.A	Canada	Europe	U.K.	Australia	U.S. Military Market and Other Countries
1	Motor Board Ass'y	E10302-004	E10302-004	E10302-004	E10302-003	E10302-004	E10302-002
21	Tonearm Ass'y	ARM-529	ARM-529	MP-201S	ARM-529	MP-201S	MP-201S
24	Servo Control P.C. Board Ass'y	MDC938G-2	MDC938G-2	MDC938G-3	MDC938G-3	MDC938G-3	MDC938G-2
34	Fuse P.C. Board Ass'y	TPS-206B	TPS-206C	TPS-206E	TPS-206GBS	TPS-206F	TPS-206D
C101	Capacitor ⚠	QFH72BM-473M	QFA72BM-473M	QFZ9007-104	QFZ9007-104BS	QFZ1007-104	QFH53AM-104
	Fuse (Primary) ⚠	QMF61U1-R50 (0.5 A)	QMF61U1-R50 (0.5 A)	QMF51A2-R20 (0.2 AT)	QMF51A2-R20BS (0.2 AT)	QMF51A2-R20 (0.2 AT)	QMF60S1-R50 (0.5 A)
	Fuse (Secondary) ⚠	QMF61U1-1R0 (1A)	QMF61U1-1R0 (1A)	QMF51A2-R80 (0.8AT)	QMF51A2-R80BS (0.8AT)	QMF51A2-R80 (0.8AT)	QMF60S1-R80 (0.8A)
	Fuse Clip ⚠	E45524-001	E45524-001	E48965-002	E48965-002	E48965-002	E45524-001
42	Shield Cover	–	–	E65716-001	E65716-001	E65716-001	E65716-001
43	Power Transformer ⚠	E03032-33B	E03032-33B	E03032-33C	E03032-33CBS	E03032-33C	E03032-33D
47	Rubber Sheet	–	–	E61796-003	E61796-003	E61796-003	E61796-003
51	Power Cord ⚠	QMP1200-200	QMP1200-200	QMP3910-244	QMP9017-007BS	QMP2500-200	QMP1200-200
52	Cord Bushing	QHS3876-162	QHS3876-162	A37897	A37897BS	A37897	A37897
61	Foot Ass'y	E65893-002	E65893-002	E65893-001	E65893-001	E65893-001	E65893-001
65	Turntable Sheet	E22936-002	E22936-002	E22936-001	E22936-001	E22936-001	E22936-001

JVC

VICTOR COMPANY OF JAPAN, LIMITED, TOKYO, JAPAN

Printed in Japan
8012-V

13. QL-F6 Schematic Diagram



Notes:

1. The voltage indicated in ☐ is measured by a tester having an internal impedance 33kΩ.
   - ◉ ☐ 33-1/3 rpm
   - ◎ ☐ 45 rpm
   - ◉ ☐ when locked

2. —— indicat
3. ▒▒ indicat
4. When replacin
5. This is the sta
   The design an

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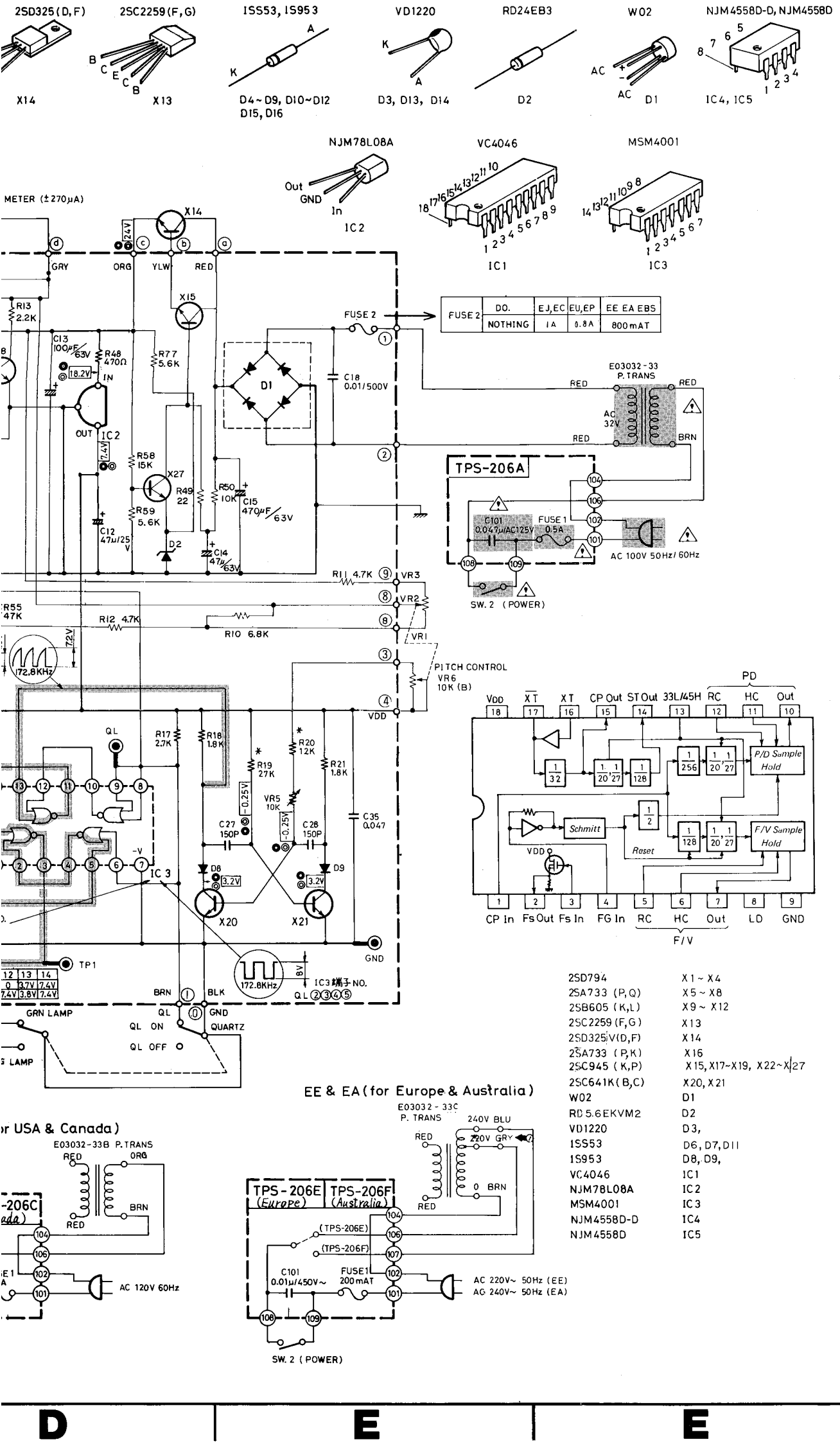

2SD794	X1 ~ X4
2SA733 (P,Q)	X5 ~ X8
2SB605 (K,L)	X9 ~ X12
2SC2259 (F,G)	X13
2SD325(D,F)	X14
2SA733 (P,K)	X16
2SC945 (K,P)	X15, X17~X19, X22~X27
2SC641K(B,C)	X20, X21
W02	D1
RD5.6EKVM2	D2
VD1220	D3,
1SS53	D6, D7, D11
1S953	D8, D9,
VC4046	IC1
NJM78L08A	IC2
MSM4001	IC3
NJM4558D-D	IC4
NJM4558D	IC5

EE & EA (for Europe & Australia)

or USA & Canada)

ites positive B power supply.
ites the signal path.
ing the parts ⚠ in the darkened ares ( ), be sure to use the designated parts to ensure safety.
tandard circuit diagram.
nd constants are subject to change without notice.

QL-F6
No. 2464